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RECLAMATION AND DEVELOPMENT GRANTS PROGRAM
APPENDIX TO REPORT TO THE LEGISLATURE

Project Evaluations and Recommendations

January 1997

Montana Department of Natural Resources and Conservation
Conservation and Resource Development Division
1625 Eleventh Avenue
P.O. Box 201601
Helena, Montana 59620-1601



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RANKING AND FUNDING RECOMMENDATIONS

Rank	Project Sponsor (Project Title)	Amount Requested	Amount Recommended	Cumulative Total Recommended
* Montana Board of Oil and Gas Conservation	(Balco Disposal Facility, Plug and Abandonment and Site Restoration)	\$300,000	\$600,000	\$600,000
1 Montana Department of Natural Resources and Conservation	Trust Land Management Division (TLMD) (Reliance Refinery Soils and Sludge Cleanup #1)	300,000	300,000	900,000
2 Montana Department of Natural Resources and Conservation	Trust Land Management Division (TLMD) (Reliance Refinery Soils and Sludge Cleanup #2)	282,300	282,300	1,182,300
3 Montana Department of Environmental Quality-Abandoned	Mine Reclamation Bureau (DEQ/AMRB) (Nancy Lee Mine Complex Reclamation)	286,914	286,914	1,469,214
4 Montana Department of Environmental Quality-Abandoned	Mine Reclamation Bureau (DEQ/AMRB) (Nellic Grant Mine Reclamation Project)	288,040	288,040	1,757,254
5 Powell County	(Charter Oak Mine and Mill Reclamation)	248,000	300,000	2,057,254
6 Mile High Conservation District	(Highland Mill Reclamation)	293,992	258,070	2,315,324
7 Butte-Silver Bow Local Government	(Upper Clark Fork Basin: Superfund Technical Assistance)	99,832	91,532	2,406,856
8 Montana Board of Oil and Gas Conservation	(1996 "A" Orphaned Well Plug and Abandonment and Site Restoration)	300,000	164,222	2,571,078
9 Carbon County	(Dry Hydrant Demonstration Project)	157,579	157,579	2,728,657
10 Toole County	(North Toole County Reclamation Project)	296,202	40,000	2,768,657
11 Montana Board of Oil and Gas Conservation	(1996 "B" Orphaned Well Plug and Abandonment and Site Restoration)	300,000	190,000	2,958,657
12 Montana State University-Reclamation Research Unit	(Reclaimed Metal Mine Lands: Agricultural Uses and Restrictions)	129,114	129,114	3,087,771
13 Montana Bureau of Mines and Geology	(Training for Environmentally and Economically Sound Resource Development)	76,043	49,722	3,137,493
14 Walkerville, Town of	(Walkerville's Plan for Development of Reclaimed Mine Properties)	113,600	40,700	3,178,193
15 Butte-Silver Bow Local Government	(Travona Mineyard Preservation and Enhancement)	170,280	145,280	3,323,473
16 Yellowstone Conservation District	(Watershed Planning in Montana Integrating Geospatial Information)	300,000	100,000	3,423,473

**Butte-Silver Bow Local Government (Butte Mine Subsidence Reclamation Project)	300,000	0	3,423,473
Deer Lodge Valley Conservation District (Development of Acid/Heavy Metal Tolerant Cultivars)	100,000	0	3,423,473
Lewis and Clark County Water Quality Protection District (Tenmile Mine Site Reclamation Project, Phase II)	268,121	0	3,423,473
Missoula, City of (Glacial Lake Missoula: An Untapped Natural Resource Opportunity)	166,089	0	3,423,473
Montana Board of Oil and Gas Conservation (1996 "C" Orphaned Well Plug and Abandonment and Site Restoration)	300,000	0	3,423,473
Montana Bureau of Mines and Geology (Oil and Gas Potential along the Fromberg Fault Zone, South-Central Montana)	95,139	0	3,423,473
Montana Department of Environmental Quality (Nonpoint Source Pollution Control in Montana)	300,000	0	3,423,473
Montana State University-Extension Service (Montana Local Government Pollution Prevention Assistance Project)	284,292	0	3,423,473
Montana State University-Reclamation Research Unit (Reclamation of Acid-Producing Mining Waste Utilizing Industrial By-Products)	297,289	0	3,423,473
North Powell Conservation District (A Watershed Approach for Mine Waste Cleanup in the Blackfoot Basin, Montana)	180,000	0	3,423,473
Rosebud Conservation District (Hydrologic and Geologic Feasibility of Coal-Mine Pits as Water Impoundments)	282,443	0	3,423,473
University of Montana-Geology Department (Gold Resource and Groundwater Contamination of the Judith Mountains: An Evaluation Plan)	39,799	0	3,423,473
Yellowstone County (South Billings Boulevard Gravel Pit Reclamation)	<u>300,000</u>	0	3,423,473
TOTAL REQUESTS	\$6,855,068		

-- The minimum funding for RDGP is \$3,000,000.

*The Montana Board of Oil and Gas Conservation has statutory priority for \$600,000 in grant funds.

**From this point, the projects are listed alphabetically and are not recommended for funding.

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APPENDIX TO RECLAMATION AND DEVELOPMENT GRANTS PROGRAM

REPORT TO THE LEGISLATURE

PROJECT EVALUATIONS AND RECOMMENDATIONS

These evaluations are based on review of the projects by the Department of Natural Resources and Conservation (DNRC). The first 17 evaluations of recommended projects are presented in the order of their ranking. To find any particular evaluation quickly, just consult the Table of Contents at the beginning of this appendix for an alphabetical listing by the names of the applicants.

For projects recommended for Reclamation and Development Grants Program (RDGP) funding, "TOTAL PROJECT COST" is the sum of "OTHER FUNDING AMOUNTS AND SOURCES" plus the "RECOMMENDED FUNDING" amount.

*The Montana Board of Oil and Gas Conservation has statutory priority for \$600,000 in grant funds.

APPLICANT NAME: MONTANA BOARD OF OIL AND GAS CONSERVATION (BOGC)

PROJECT/ACTIVITY NAME: Balco Disposal Facility, Plug and Abandonment and Site Restoration

AMOUNT REQUESTED: \$ 300,000

OTHER FUNDING AMOUNTS AND SOURCES:
\$ 10,000 Applicant

TOTAL PROJECT COST: \$ 610,000

RECOMMENDED FUNDING: \$ 600,000

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The purpose of this grant request is to provide funding to remediate the Balco Disposal Facility. The site contains +/-50,000 barrels of oil sludge and an old saltwater pit. It is unknown how much contamination has occurred under the pit. Cost estimates range from \$500,000 to \$1 million. If any funds are available after the Balco site restoration project is complete, the funds will be used to properly plug and abandon additional orphaned oil and gas wells.

The Board of Oil and Gas Conservation will eliminate the threat of further contamination by soliciting bids to remediate the site and plug and abandon the well. Under the supervision of the Board of Oil and Gas Conservation's staff, the successful bidder will dispose of the oil sludge, properly plug and abandon the well, dispose of and/or remediate contaminants, and reclaim the surface location.

The disposal facility was used extensively until 1992, when the operator's bond was forfeited, and the operator was instructed to reclaim the location and plug the well. Since that time severe penalties have been imposed on the operator by the U.S. Environmental Protection Agency. The operator is unable to operate the facility and will not reclaim the facility. The company's assets will not cover the liabilities to creditors, leaving the operator insolvent. Since the operator is unwilling and most likely unable to perform the site restoration, the responsibility for the disposal facility and any potential environmental damage rests with the Board of Oil and Gas Conservation and the State. The sludge will be disposed of properly, the well will be properly plugged and abandoned, and the location will be reclaimed when funding is made available. Once grant and Oil and Gas Damage Mitigation Account money is spent on the Balco Disposal Facility, liens will be filed in accordance with Section 82-11-201, MCA.

The orphaned wells are located throughout Montana. In most cases the wells that present the highest potential to damage the environment because of leaking or loss of mechanical integrity will be plugged first.

The project is estimated to take 24 months. The work will generally begin during the first suitable field season following the availability of funding.

TECHNICAL ASSESSMENT:

The Balco Disposal Facility in Richland County encompasses approximately two acres, roughly one-third of which contains a saltwater disposal pit. Additionally, there are over a dozen, on-site, waste oil tanks containing 50,000 barrels of waste oil and saltwater. Leaking tanks, damaged containment dikes, leaking pit liners, and fencing need repair, replacement, and/or proper disposal. The saltwater and waste oil contaminants require proper containment, disposal, and/or treatment.

BOGC has identified several options to reclaim the site, including:

1. Fencing the site
2. Incinerating the waste oil
3. Injection well disposal of waste oil and saltwater
4. Recycling the waste oil
5. Reprocessing the waste oil
6. Land farming of oil contaminants
7. Bio-remediation

Which alternative is the most feasible in terms of effectiveness, implementability, and cost has not been determined. BOGC has proposed to issue a "request for proposals" from qualified consulting firms, in which the firm would be required to submit its assessment of which reclamation alternative and design would be most appropriate and cost-effective. The design would be based on the funds available. Preliminary cost estimates by BOGC indicate the remedial action needed to reclaim the site would be about \$600,000. This figure may be significantly underestimated, depending on the results of further sampling and detailed analysis of reclamation alternatives, in which case only partial remediation of the site would occur. Any plan for partial removal/disposal should be prioritized on the basis of the contamination threat to surface water, groundwater, and public safety.

Apart from the obvious environmental degradation occurring at the site, a regulatory enforcement issue is also unresolved. The U.S. Environmental Protection Agency (EPA) has filed suit against Balco, Inc. and was awarded \$1,000,000 in penalties by the court. EPA has liens against all company assets. This judgment has been on hold since 1992. It should be noted that the \$1,000,000 penalty against Balco, Inc. was for violations of the permit issued by EPA and relates directly

to the site’s underground injection well. Whether EPA has authority to initiate legal action against Balco, Inc. for surface violations is unknown at this point, but appears unlikely.

The status and significance of EPA action need to be clarified relative to the BOGC proposal, before any expenditure of RDGP funds. In other words, there is a responsible party for this site. Whether it is financially able to pay for the cost of site cleanup is unknown at this point. It is also important to determine the extent and nature of any EPA-conducted cleanup so that potential state actions at this site do not impede or duplicate federal efforts.

If EPA action against Balco, Inc. is unsuccessful or not aggressively pursued, then BOGC should investigate thoroughly the possibility of state action against Balco, against either the company or individual owners. The proposal represents a major expenditure from RDGP. Before these funds are used for cleanup, all reasonable enforcement efforts should be exhausted by the regulatory agency issuing the permit to operate.

FINANCIAL ASSESSMENT:

BOGC requests RDGP funds for the following:

Salaries and wages	\$ 5,383
Fringe benefits	\$ 1,453
Contracted services	\$288,220
Communications	\$ 1,000
Travel	<u>\$ 3,944</u>
TOTAL	\$300,000

The application does not provide sufficient detail to evaluate the costs of cleanup. The preferred alternative has not been selected, nor have cleanup options been evaluated for cost-effectiveness. Whether \$600,000 in RDGP funds would be sufficient to remediate the site is unknown. Proposed solicitation of firms to provide this information would occur after receipt of grant funds.

The priority and funding amounts for BOGC’s applications “A,” “B,” “C,” and the Balco Disposal Facility are ultimately established pursuant to Section 90-2-1113 (2) (a-c), MCA. For reference, these provisions state:

- “(2) (a) Subject to the conditions of this part, the department shall give priority to grant requests, not to exceed \$600,000 in total for the biennium, from the board of oil and gas conservation. The board of oil and gas conservation shall use a grant that received priority under this subsection (a) only for oil and gas reclamation projects. A grant may not be used for personnel costs or general operating expenses of the board of oil and gas conservation.*
- (b) Any unobligated fund balance of a grant that received priority under subsection (2)(a) remaining at the end of the current biennium must be included as part of the \$600,000 limitation for the next biennium.*
- (c) The priority given to the board of oil and gas conservation under subsection (2)(a) does not preclude the board of oil and gas conservation from submitting additional grant requests. The department shall evaluate additional grant requests from the board of oil and gas conservation in accordance with the provisions of subsection (1).”*

Of the \$1.2 million total in grant requests received from BOGC, RDGP has recommended that \$954,222 be funded as follows:

	<u>Total Requested</u>	<u>Total Recommended</u>
Balco Disposal Facility	\$ 300,000	\$ 600,000
Application "A"	300,000	164,222
Application "B"	300,000	190,000
Application "C"	<u>300,000</u>	<u>0</u>
TOTAL	\$1,200,000	\$ 954,222

It is recommended (a) that the Balco site funding level of \$600,000 be considered priority funding per the provisions of Section 90-2-1113 (2) (a), and (b) that applications "A," "B," and "C" be considered subject to the provisions of Section 90-2-1113 (2) (c), making them "additional grant requests" for which no priority is provided by statute.

At the time of this review (October 1996) BOGC has \$600,000 in unobligated priority grant funds from the previous biennium. It also has \$468,011 in nonpriority RDGP grant funds that remain unobligated.

ENVIRONMENTAL EVALUATION:

Beneficial impact to the environment would be expected over the long-term if effective remedial actions are undertaken to remove, contain, or treat site contaminants. Specific impacts cannot be evaluated since a cleanup method has not been selected. The potential environmental consequences of all potential remedial actions, both short- and long-term, need to be assessed fully by BOGC prior to selection of a preferred cleanup remedy.

PUBLIC BENEFITS ASSESSMENT:

Direct benefit to the area's soil, water, and vegetative resources would be realized by this project. The waste oil and saline water represent a threat to the environment and human health and safety. Removal of these contaminants would protect these resources.

RECOMMENDATION:

Given the safety and environmental risks this site presents, a grant of up to \$600,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. In the opinion of RDGP, the Balco site ranks higher in priority for cleanup than the BOGC's three well plugging and abandonment proposals (applications "A," "B," and "C"), and it is recommended that the BOGC's priority funding allocation of \$600,000 be used at this site.

PROJECT NO. 1 (The following project summary includes two applications.)

APPLICANT NAME: MONTANA DEPARTMENT OF NATURAL RESOURCES AND
CONSERVATION - TRUST LAND MANAGEMENT DIVISION (TLMD)

PROJECT/ACTIVITY NAME: Reliance Refinery Soils and Sludge Cleanup #1
Reliance Refinery Soils and Sludge Cleanup #2

AMOUNT REQUESTED: \$ 582,300

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 50,000	Applicant
\$ 100,000	Montana Department of Environmental Quality (DEQ)

TOTAL PROJECT COST: \$ 732,300

RECOMMENDED FUNDING: \$ 582,300

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The Trust Land Management Division (School Trust Lands) is applying for two concurrent Reclamation and Development Grants to clean up petroleum-contaminated soils and sludges resulting from operations at the former Reliance Refinery in Kalispell, Montana. The proposed cleanup plan is to treat contaminated soils in an asphalt batch plant with the end product used for road construction. The ultimate goal is to restore the site to usable land so the State can again lease this property.

The Reliance Refinery Company owned and operated a crude oil refinery near the city of Kalispell from approximately 1925 to 1930. Refinery operations apparently were not economically feasible because School Trust Lands obtained title to the property under a foreclosure of lien for delinquent oil taxes in September 1934. Unity Petroleum Corporation subsequently leased the property from the State and operated the refinery from 1935 to 1971. Waste oils, sludges, and tar substances were disposed of in pits and/or discharged onto the ground surface while the refinery was operational. These petroleum constituents have contaminated the soil and groundwater on and beneath the site and represent a hazard to the community, as well as the environment. The majority of the contamination is located on approximately a 5-acre parcel that is within 150 feet of a number of private residences and about 750 feet from the Stillwater River.

The proposed remedial method will be to remove, treat, and recycle approximately 20,000 cubic yards of petroleum-contaminated soils into road-grade asphalt. The contaminated overburden will be crushed and incorporated into the feed stream at a local asphalt batch plant, thereby converting this liability into a usable end product. The primary objective is to eliminate the risk of human physical contact with and exposure to the contaminants. The site is contained on the state Superfund list and has been ranked as a high priority by the Montana Department of Environmental Quality.

The project has broad-based local and state support. The Honorable Douglas D. Rauthe, Mayor of Kalispell, aptly summarized the importance of this project: "Once cleaned up, this property can be put to a useful purpose." Research of all potentially responsible parties has determined that no viable party exists that could be held responsible for contamination and cleanup of the site. No federal moneys are available to address remediation of this property.

TECHNICAL ASSESSMENT:

The Trust Land Management Division (TLMD) proposal to remove, treat, and recycle the site's contaminated soils includes two grant applications and consists of three interrelated tasks. A description of each task and reviewer comments are presented below.

Task 1. Treatability Analysis

Previous studies have shown that asphalted petroleum-contaminated soils are highly stable and perform adequately as an end product. However, because this is the first time this process has been used in Montana, it will be necessary to demonstrate to DEQ that contaminants (metals and semi-volatile organic compounds) will be retained in the asphalt over long periods of time. Bench-scale leachability testing will be conducted to show that using the asphalt batch process will not enhance contaminant transport. A series of laboratory leaching tests will be performed using contaminated soils, virgin asphalt, and treated asphalt to evaluate contaminant mobility and release.

Additionally, it will be necessary to test the emissions emanating from the kiln stack for compliance with air quality regulations. Air quality samples will be collected from pre- and post-treated contaminated test burns.

Task 2. Remedial Design

This task which consists of a number of subtasks that will be accomplished by DNRC personnel with assistance from DEQ, includes':

1. Prepare and submit a Voluntary Cleanup Plan to DEQ Superfund for approval
2. Prepare construction plans and bid specifications
3. Prepare schedule of cleanup activities
4. Prepare health and safety plan for cleanup contractors
5. Obtain all necessary permits and easements
6. Advertise and let bids
7. Evaluate bids and award bid to lowest qualified bidder

This phase may also involve coordination with the Architecture and Engineering Division of the Department of Administration for bid package review and bid solicitation.

Task 3. Cleanup/Construction

The anticipated scope of work for the site cleanup/construction phase includes a series of subtasks aimed at producing a usable end product. The chronology of subtasks includes:

1. Excavate contaminated soils and sludges, transport them to the crusher, and stockpile them
2. Return to site with fill material and replace contaminated soils
3. Blend contaminated materials and input them into crusher
4. Input crushed aggregate into hot plant (rotary kiln)
5. Blend treated aggregate with virgin gravel and input to hot plant
6. Mix with appropriate oils to produce asphalt

Any stockpiled materials will be placed in a designated area that is lined and bermed to prevent contaminants from leaching into native soils. The fill materials used in the excavation will be compacted between 92 and 93 percent so that

the site will have a stable base for building a structure. The asphalt produced from the contaminated soils will be used in either highway road construction projects (if acceptable) or private paving.

In addition, there is an abandoned wood-frame structure on the premises that will require demolition and removal.

The Reliance Refinery site has a high priority on the state Superfund list because soil and sludge contamination present a direct contact hazard and are a source of petroleum contamination to the underlying aquifer that is used for nearby drinking water supplies. For these same reasons it has a high priority for RDGP funds. Cleanup at this time will prevent the possibility of a further increase in downgradient contamination, which is critical due to the location of downgradient drinking water supplies that have not been impacted by groundwater contamination from the site to date, but could be impacted in the future. Because the Reliance Refinery site operators are defunct, the state as the site owner is the only entity that can be relied upon to clean up the site.

The Reliance Refinery site is bordered by two other contaminated Superfund sites, the Kalispell Pole and Timber and the Yale Oil Refinery sites. The owner of the Yale site has already remediated contaminated soils and sludges, but not the underlying groundwater. The owner of the Kalispell Pole and Timber site is in the planning process for a voluntary cleanup of contaminated source areas. Representatives of these private entities have vocally expressed their desires to have the state remediate the contamination problems on the state's property at the Reliance Refinery. Cleaning up the contaminated groundwater at the upgradient Kalispell Pole and Timber site would have a diminished effect if downgradient source areas on the Reliance Refinery were not also cleaned up. Similarly, cleanup of groundwater underlying the Yale site would have a diminished effect if source areas at the upgradient Reliance Refinery and Kalispell Pole and Timber sites were not cleaned up. Thus, not only will this grant proposal clean up contamination source areas at the Reliance site, but it will also protect the cleanup of the neighboring sites.

DEQ consultants will complete a remedial investigation/feasibility study (RI/FS) in January 1997 that will augment existing information on the nature and extent of contamination at the Reliance Refinery. The RI/FS is not expected to change the preferred reclamation alternative chosen by TLMD, but may lead to refinement of certain aspects. DEQ will provide technical assistance to DNRC in preparation of a cleanup plan that will meet state Superfund requirements. DEQ will also be providing its technical support as in-kind matching funds, thereby allowing grant funds to be used directly for sampling, analysis, and construction activities.

FINANCIAL ASSESSMENT:

As noted below, the total budget will be used strictly for contracted services (i.e., for the cleanup contractor, treatability studies, and equipment). Any costs incurred by the applicant, such as salary, travel, and outside expenses, will be donated as in-kind match. No administrative costs are included in the budget.

A line-item breakdown of total construction contractor expenses for both applications follows.

<u>Item</u>	<u>Units</u>	<u>Cost</u>
Excavation/removal	20,000 cubic yards	\$ 42,000
Transport to crusher	20,000 cubic yards	\$ 78,000
Crushing	20,000 cubic yards	\$140,000
Stockpiling	20,000 cubic yards	\$ 31,000
Thermal treatment	150 tons/hour	\$120,000
Haulage to stockpile	20,000 cubic yards	\$ 28,000

Geosynthetic liner	200,000 square feet	\$ 64,500
Liner installation	lump sum	\$ 4,500
Total Estimated Costs		\$508,000
Contingency (10 percent)		<u>\$ 50,800</u>
TOTAL COST WITH CONTINGENCY		\$558,800

Nonconstruction-related costs include:

<u>Item</u>	<u>Cost</u>
Laboratory analyses (air, soil, and water)	\$ 7,500
Treatability analyses (leaching tests)	\$ 7,500
Sampling equipment (rental/lease/purchase)	\$ 5,000
Miscellaneous expenditures	<u>\$ 3,500</u>
TOTAL NONCONSTRUCTION COSTS	\$23,500

Total RDGP funding that is being requested is \$582,300. Preliminary screening of reclamation alternatives designed to partially remove source contaminants indicates that the degree of risk reduction attained by partial removal is not cost-effective. The cleanup/construction costs estimated for this project accurately reflect the actual costs that will be incurred for the preferred alternative. The cost estimate was developed through a series of meetings with a reputable local paving company. Although not apparent, the level of detail for line-item costs also includes ancillary expenses such as propane and electricity for the kiln, labor, and materials.

All designated matching funds are committed and secured at the time of preparation of the grant application.

ENVIRONMENTAL EVALUATION:

The overall impact to the environment is beneficial and long-term. Short-term impacts associated with the excavation, hauling, crushing, burning, and blending of contaminated material are expected. Air quality monitoring and appropriate mitigative action will minimize these problems. An air quality permit will likely be required. Stockpiled material will require appropriate wind and water erosion protection and containment measures to prevent contaminant infiltration into the groundwater. A plan for disposal of contaminants not capable of being recycled or treated to acceptable levels needs to be evaluated.

PUBLIC BENEFITS ASSESSMENT:

The site is within the Evergreen Water District (residential area) and contiguous with the city limits of Kalispell. The site poses an imminent threat to public health and the environment. Removing the soils and sludges will eliminate the health and safety hazards associated with the petroleum contaminants. In addition, the potential for further surface water and groundwater degradation will be mitigated by removing the source.

Adjacent residential landowners who are affected and endangered by the contamination will directly benefit because the project will eliminate the potential for direct contact with site contaminants.

Montana has at least 10 other abandoned refinery sites with soil contamination and sludge pits that remain eyesores and threats to human health, safety, and the environment. This project will assist in demonstrating the success of this technology to clean up similar problems. Once an affordable technology has been identified and demonstrated, cleanup of the other sites will be expedited. In this respect, this project will assist many local communities impacted by historical

crude oil refining. All products from this project, such as bid specifications and final reports, will be available for use by the general public.

Another indirect benefit is that recycling these wastes conserves other natural resources. All Montanans will benefit indirectly by a cleaner, more healthful environment. The Trust Land Management Division of DNRC has been designated as the steward for Montana's school trust lands. This project will restore this property to being a beneficial public resource, rather than the liability it currently is to the State.

RECOMMENDATION:

A total award of up to \$582,300 is recommended for the Reliance Refinery grant applications #1 and #2 contingent upon DNRC approval of the project scope of work and budget. Application #1 is recommended for \$300,000, and application #2 for \$282,300.

PROJECT NO. 2

APPLICANT NAME: MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION - TRUST LAND MANAGEMENT DIVISION (TLMD)

PROJECT/ACTIVITY NAME: Reliance Refinery Soils and Sludge Cleanup #2

Please refer to the project writeup on page 5 of this report.

PROJECT NO. 3

APPLICANT NAME: MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - ABANDONED MINE RECLAMATION BUREAU (DEQ/AMRB)

PROJECT/ACTIVITY NAME: Nancy Lee Mine Complex Reclamation

AMOUNT REQUESTED: \$ 286,914

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 3,200,000	Applicant
\$ 19,000	U.S. Department of Agriculture (USDA) Lolo National Forest

TOTAL PROJECT COST: \$ 3,505,914

RECOMMENDED FUNDING: \$ 286,914

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The purpose of this project is to address human health and safety hazards from exposure to heavy metals. The project encompasses three sites: the Nancy Lee Mine, the Nancy Lee Mill site, and the Nancy Lee-Slowey Mill site. These sites are a result of over a century of mining and milling activities that have deposited tailings and waste rock contaminated with high levels of arsenic, lead, and manganese. In combination, the sites have approximately 140,000 cubic yards of tailings and 30,000 cubic yards of waste rock that have contaminated soil and water and destroyed vegetation. In addition, easy access to these sites allows motorbikers, hunters, and nearby residents to become exposed to the contamination. Also, contaminated groundwater appears to be migrating into the Clark Fork River from the Slowey Mill tailings, only 200 feet away.

The primary goals of this project are to reclaim the sites and reduce the exposure of the public and the surrounding environment to the hazards. The goals can be achieved by consolidating, capping, and revegetating wastes on the sites.

The Montana Department of Environmental Quality, Abandoned Mine Reclamation Bureau will be the organization responsible for conducting this reclamation project.

The Nancy Lee-Slowey Mill site is located on private land adjacent to the Clark Fork River in Section 14, Township 17 North, Range 27 West. The Nancy Lee Mines and the Nancy Lee Mill site are located on U.S. Forest Service land and private land in Section 31, Township 18 North, Range 26 West, and Sections 5 and 6, Township 17 North, Range 26 West, in Mineral County, Montana. The sites are accessed from Superior by traveling 4 miles northwest on I-90 to Exit 43 and then driving 3 miles northwest on the frontage road to the Slowey Mill or driving 1 mile to Keystone Gulch Road, then 4 miles to the Nancy Lee Mine and Mill.

Project construction should be completed within 60 consecutive calendar days.

TECHNICAL ASSESSMENT:

This application requests funding for a portion of the reclamation activities planned for the Nancy Lee Mine Complex. DEQ has requested \$3.2 million in federal Office of Surface Mining (OSM) funds to reclaim the majority of disturbances. Portions of the Nancy Lee Slowey Mill and the Nancy Lee Mine, however, are ineligible for OSM funding because mining activity occurred at these sites after August 1977 (Title IV, SMCRA). The entire complex, consisting of the Nancy Lee Mine, Nancy Lee Mill site, and Nancy Lee-Slowey Mill site, covers a combined disturbed area of approximately 47 acres.

The applicant proposes to consolidate, cap, and revegetate wastes on these sites following procedures set forth in the Comprehensive Environmental Cleanup and Responsibility Act (CECRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the National Contingency Plan (NCP). The applicant has successfully completed similar Superfund cleanups in the past. To date, AMRB has completed a preliminary assessment (PA), site surveys, reclamation work plans (RWP), field sampling plan (FSP), and a reclamation investigation (RI) report for the Slowey Mill site and a site survey, PA, RWP, and FSP for the Nancy Lee Mine and Nancy Lee Mill site. These documents, required in CECRA/CERCLA remedial actions, identify high concentrations of heavy metals in the mill tailings and waste rock located on site. Leachate and runoff from these sources threaten the area groundwater, Mill Creek, and the Clark Fork River.

The Nancy Lee-Slowey Mill site is ranked no. 24 in the state's *"Abandoned Hardrock Mines Priority Site" Summary Report* (1995), the Nancy Lee Mill site is no. 44, and the Nancy Lee Mine is no. 162. The combined site ranking for these three sites elevates the priority to no. 15. The sites present severe threats to both human health and the environment and rate a high priority for use of RDGP funds.

FINANCIAL ASSESSMENT:

The RDGP request is \$286,914, all of which will be used for construction. The total project cost is over \$3.5 million.

The grant funds are necessary to conduct cleanup of the Nancy Lee-Slowey site and the Nancy Lee Mine. Without RDGP funds, DEQ is ineligible for \$3.2 million in federal funds available for these three sites. In part, RDGP funds will be used to remove tailings and waste rock material deposited since the federal funding eligibility cutoff date of August 1977. This material overlays the tailings and waste rock material eligible for federal funding. For every state dollar spent on the project, over \$11 in federal funds will be expended.

ENVIRONMENTAL EVALUATION:

Short-term impacts to soil, water, and vegetation are expected during construction, but should be relatively minor and easily mitigated. Long-term impacts are beneficial to the soil, groundwater, surface water, and the flora/fauna inhabiting the area. A detailed environmental assessment (EA) will be prepared by AMRB and submitted to the Office of Surface Mining. The EA will adequately address any measures necessary to avoid or mitigate adverse impacts resulting from site cleanup activities.

PUBLIC BENEFITS ASSESSMENT:

Reclamation of the Nancy Lee Mine Complex will reduce the risk of heavy metal contamination to both humans and the environment. The project is consistent with the purpose of RDGP to repair, reclaim, and mitigate environmental damage to public resources and develop and ensure the quality of public resources for all Montanans.

RECOMMENDATION:

A grant of up to \$286,914 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 4

APPLICANT NAME: MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - ABANDONED MINE RECLAMATION BUREAU (DEQ/AMRB)

PROJECT/ACTIVITY NAME: Nellie Grant Mine Reclamation Project

AMOUNT REQUESTED: \$ 288,040

OTHER FUNDING AMOUNTS AND SOURCES:
\$1,200,000 Applicant

TOTAL PROJECT COST: \$1,488,040

RECOMMENDED FUNDING: \$ 288,040

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The purpose of this project is to address human health and safety hazards associated with exposed and accessible, heavy-metals-contaminated soil, waste rock, and tailings at the Nellie Grant Mine site. As a result of over 100 years of mining, the Nellie Grant Mine site harbors an estimated 7,000 cubic yards of surface mill tailings; 6,000 cubic yards of buried tailings; and 26,000 cubic yards of waste rock. All of these mine waste materials contain significantly elevated levels of arsenic, cadmium, copper, mercury, lead, and zinc. Site surface water and groundwater degradation has been documented. Surface water enters the site with a relatively low heavy-metals content and a pH of 6.5. This same water, after coming in contact with mine waste, exits the site enriched with a significant amount of heavy metals and a pH of 3.7. Site water sampling clearly indicates contaminant migration off-site. Contaminated soil and water have affected site trees, grass, and shrubs, which have all succumbed to heavy metal poisoning. As a result, much of the site is devoid of any kind of vegetation.

The primary objectives of this project are to remove solid media contaminant sources at the Nellie Grant site that exhibit hazardous waste characteristics and dispose of these wastes in a constructed repository. Site surface water would be isolated from contact with contaminated mine wastes, and all mine disturbed areas would be regraded, top soiled, and revegetated. When the above tasks are completed, heavy metals exposure and migration will be significantly reduced or eliminated. Water quality will be improved, and the site will again be able to support a stand of native vegetation species.

The Montana Department of Environmental Quality, Abandoned Mine Reclamation Bureau will be the organization responsible for conducting this reclamation project.

The Nellie Grant Mine is located approximately 13 miles southwest of Helena. The site is located in Section 14, Township 8 North, Range 5 West, Jefferson County, Montana.

Project construction should be completed within 60 consecutive calendar days.

TECHNICAL ASSESSMENT:

Analysis of the sampling data collected from the site documents that the Nellie Grant presents unacceptable risks to human health and the environment. A preliminary screening of reclamation technologies and processes potentially adaptable to the site identifies 11 reclamation alternatives. A second screening resulted in detailed analysis being conducted on the following 8 reclamation alternatives (solid media only).

1. No action
2. Institutional controls (e.g., fencing)
3. In-place containment of mine wastes with drainage of tailings pond 5
4. Consolidation and containment of mine wastes with drainage of tailings pond 5
5. Removal/disposal of mine wastes in a site-specific, modified Resource Conservation and Recovery Act (RCRA) repository
6. Partial removal/disposal of mine waste in an on-site repository with partial in-place containment
7. Removal/treatment/disposal at a permitted off-site disposal facility
8. Off-site disposal in a mine waste facility

This proposal does not directly address the contaminated aqueous media (surface water and groundwater). Since the tailings and waste rock material are the source of contamination, it is conceivable that the solid media alternative selected from the above list will make further action at the site unnecessary.

The applicant has submitted documentation to RDGP indicating that option no. 8 best meets the following criteria:

1. Overall protection of human health and the environment
2. Compliance with federal/state cleanup laws and standards (e.g., method of treatment, concentration levels of contaminants)
3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility, or volume of contamination
5. Short-term effectiveness
6. Implementability
7. Cost

This alternative includes excavating mill tailings (including tailings within tailings pond 5, buried tailings, and surficial tailings/intermixed waste) and disposing them off-site in a dedicated mine waste disposal facility at the Basin Creek Repository, approximately 17 miles from the site by existing roads. The wastes would be placed in a repository that would be constructed, operated, closed, and monitored in accordance with applicable regulations and accepted waste management practices. The setting and design of the facility would protect human health and the environment.

Other waste sources at the Nellie Grant site, primarily waste rock/disturbed soils, would be neutralized and revegetated in-place. Run-on/runoff controls would be implemented to mitigate erosion from disturbed areas and prevent mine water discharge from contacting mine wastes.

This alternative is technically feasible if the Basin Creek Repository is constructed. The construction steps involved are considered standard construction practices. Excavation, haul, and disposal of wastes would be accomplished by standard construction methods and equipment that are readily available. Also, on-site revegetation of the disturbed soils/waste rock, and other disturbed areas would involve common construction techniques. Materials necessary for the project are readily available.

Option no. 8, however, may not be implementable. At the time of RDGP review, a number of issues, primarily liability concerns, were involved with constructing the proposed mine waste facility (Basin Creek Repository). If these issues cannot be resolved, option no. 5, disposal on site in a modified RCRA repository, offers a comparable level of reduction of risk of human and ecological exposure, but may be slightly more difficult to implement because of space limitations. Option no. 5 is estimated to cost slightly less than option no. 8.

The site investigation, sampling, and alternatives chosen for implementation comply with stringent federal/state requirements governing cleanup of sites containing hazardous materials and will result in cost-effective implementation of the project.

The Nellie Grant site is no. 29 on Montana's statewide priority ranking of hardrock abandoned mine sites and is a good example of interagency cooperation in addressing environmental problems at abandoned mine sites. Many of the sites ranking higher either are presently in some stage of cleanup or evidence a financially viable responsible party for the reclamation. The project is a high priority for use of RDGP funds.

FINANCIAL ASSESSMENT:

The total cost of reclamation is estimated at \$1,488,040. This estimate was derived from recent bid tabulations from similar cleanups, contractor quotes, and engineering estimates and is within acceptable ranges for the type of work to be performed. The RDGP request is \$288,040, all of which will go to the construction contractor. Costs for cleanup at hazardous waste sites are typically higher than costs for general earth-moving projects because of the extensive sampling

and investigation involved and the regulatory requirements for treatment, removal, or disposal of hazardous substances. In that light, the costs presented in the application are not unreasonable. The construction contract will be awarded to the lowest qualified bidder.

ENVIRONMENTAL EVALUATION:

It is anticipated that the construction would be accomplished in a relatively short time period (one field season); therefore, impacts associated with construction would be short-term and minimal. Potential short-term impacts to the site's wetlands would be mitigated by constructing temporary erosion controls, including a sedimentation basin to collect runoff from the site. On-site workers would be adequately protected during the construction phase by utilizing appropriate personal protective equipment and by following proper operating and safety procedures; however, short-term air quality impacts to the surrounding environment may occur due to the large volumes of waste requiring excavation and transportation. Control of fugitive dust emissions would be provided by applying water (via water truck) to surfaces receiving heavy vehicular traffic, in excavation areas, etc. Short-term impacts to the surrounding community are not expected to be significant due to the remote location of the project site and the small resident population. Option no. 8 would involve few short-term impacts to the surrounding community since the route to the disposal facility does not go through any established communities. Application of water to the roads may become necessary in the vicinity of any impacted small communities or residences, if dust generation is significant.

A Stormwater Discharge Permit will be needed, and Best Management Practices (BMPs) will be adopted to satisfy the requirements of the permit. Additionally, revegetation requirements contained in the Surface Mining Control and Reclamation Act would be met. State of Montana dust suppression and control requirements are applicable to earth-moving activities associated with this alternative.

PUBLIC BENEFITS ASSESSMENT:

Reclamation of the Nellie Grant Mine site will significantly reduce or eliminate contaminant migration off-site; eliminate the possibility of human contact with contaminated soils, waste rock, water, and tailings; and stabilize hazardous slopes and rock piles. Direct benefits will accrue to the environment, recreationists, and contractors/consultants hired to perform the reclamation. Surrounding property (public and private) will also be enhanced, as will area wetlands and the water quality of Lump Gulch Creek.

RECOMMENDATION:

A grant of up to \$288,040 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 5

APPLICANT NAME: POWELL COUNTY

PROJECT/ACTIVITY NAME: Charter Oak Mine and Mill Reclamation

AMOUNT REQUESTED: \$ 248,000

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 300	Applicant
\$ 67,250	Helena National Forest
\$ 150,000	Department of Environmental Quality (DEQ)

TOTAL PROJECT COST: \$ 517,550

RECOMMENDED FUNDING: \$ 300,000

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The Charter Oak Mine and Mill are located approximately 25 miles southwest of Helena, Montana, in the SW¼, NE¼, of Section 36, Township 9 North, Range 7 West. The historical mine and mill operations at the Charter Oak site have significantly degraded the environmental setting. Based on scientific studies, data suggest that the site may pose a threat to human health and safety, and, more likely, to sensitive ecosystems of the adjoining wetlands and the Little Blackfoot River.

The fact that the site is adjacent to the Little Blackfoot River and floodplain provides the need and urgency for reclamation. Both permanent and seasonal residences are located upstream and downstream from the site along the Little Blackfoot River and floodplain. A seasonally used children's camp is located approximately one mile downstream. Genetically pure Westslope cutthroat trout have been observed in Telegraph Creek (a tributary of the Little Blackfoot River) and downstream of the site in Elliston Creek. Although uncommon, bull trout have been collected from the river near Elliston. The U.S. Forest Service (USFS) has designated the Little Blackfoot River as a priority watershed for bull trout in the agency's INFISH management direction strategy.

Numerous studies and analyses have been conducted at the site to detect environmental impacts and risks to soils, sediments, tailings, and subsoils, as well as plant and animal life. Studies have concluded that heavy metals such as the contaminated mill tailings at Charter Oak represent a significant long-term risk to the aquatic resources of the Little Blackfoot River, as well as a concern to public health and safety. Removal and stabilization of the tailings and waste rock would significantly reduce the risks posed by these conditions.

In 1996, the Helena National Forest contracted an engineering evaluation and cost analysis (EECA) to analyze Phase I of the Charter Oak mine and mill reclamation project. The EECA addressed several remedial actions to deal with the tailings impoundment containing approximately 12,000 cubic yards of milling and contaminated soils tailings at the site of the former Charter Oak Mine and Mill. In July 1996, the U.S. Forest Service contracted to have Phase I completed by October 1996. The total cost of Phase I is approximately \$600,000.

This specific project being proposed for 1997 RDGP grant funding is actually Phase II of a multi-phase reclamation project already in progress. The overall reclamation goal of Phase II will be to eliminate potential environmental and

public health risks posed by the instability of and the high concentrations of metals in the waste rock dumps. Specific objectives include: preventing humans, wildlife, and aquatic life that use the area from being exposed to the high concentrations of metals; preventing contaminated waste rock from affecting the adjacent wetland area or from migrating into adjacent surface water and groundwater; avoiding unintended environmental consequences during or after the removal and stabilization actions; and complying with “Applicable or Relevant and Appropriate Requirements” (ARARS) to the extent practical.

Phase II will begin in July 1997 and will be completed within three months. Subsequent phases will include eliminating adit discharge, closing hazardous mine openings, securing the historical integrity of the mill and other associated buildings, and monitoring water quality.

Although the Helena National Forest is the responsible organization for this site, a variety of agencies have been involved in efforts to address environmental risks in the past several years. These agencies include the Montana Department of Environmental Quality (formerly the Department of Health and Environmental Sciences, Water Quality Bureau), the U.S. Forest Service, and the former Montana Department of State Lands (DSL), Abandoned Mine Reclamation Bureau (AMRB).

TECHNICAL ASSESSMENT:

The Charter Oak reclamation project consists of multiple phases. Phase I, which was completed in the fall of 1996, involves removing mill tailings from the Little Blackfoot River floodplain; Phase II, the current grant request, involves removal and containment of mine waste rock. Several other phases are envisioned after completion of Phases I and II, including elimination of the adit discharge, closure of hazardous mine openings, and historical preservation. The RDGP grant request is in the amount of \$248,000 for Phase II. (Phase I construction costs are approximately \$600,000.)

The Charter Oak Mine and Mill site ranks 11th out of 276 sites in Montana’s inventory of abandoned or inactive hardrock mine sites DSL, AMRB, (*Abandoned Hardrock Mine Priority Sites - Summary Report*, 1995). This ranking, which is based on site-specific information, including volumes of wastes, contaminant concentrations, observed releases to surface water and groundwater, water quality criteria exceedences, and potential public safety hazards, is used by RDGP to assist in the review and evaluation.

A removal site evaluation document for the Charter Oak site was prepared in 1994. An engineering evaluation and cost analysis (EECA) for the waste rock portion of the site is being prepared by USFS and is scheduled for completion in December 1996. This document will refine existing data for the site and lead to preparation of final design documents.

Existing data pertaining to the site show that high concentrations of metals, particularly arsenic and lead, are present in the mill tailings, waste rock materials, and acidic adit discharge. There is also physical evidence of impacts to the wetlands and beaver ponds adjoining the site. A qualitative risk assessment shows that the site poses a risk to human health and the environment. Since the site is being proposed for a recreational/historical end use, direct contact with site contaminants by site visitors is a primary concern. The RDGP evaluation is concerned with the risk associated with contaminants, primarily arsenic and lead, from the waste rock only.

Nine distinct waste rock dumps, totaling an estimated 19,000 cubic yards, are present at the site. The waste rock materials contain very high concentrations of heavy metals, particularly arsenic and lead, that are present at the surface. Some of these dumps are located on extremely steep slopes above the mine mill, and others are located adjacent to open adits and surface water systems. There is evidence of erosion occurring on some of the waste rock dumps.

Several preliminary alternatives including no action, exist for managing the waste rock dumps. including no-action. A preliminary screening of solid media alternatives suggests that the waste rock be removed and disposed of in a mine waste repository. In terms of effectiveness, implementability, and cost, this alternative appears to be the most feasible. Although a detailed analysis of alternatives has not been completed, an adequate job of characterizing the sources of contamination and screening the reclamation alternatives has been conducted to this point. The scheduled EECA for Phase II (December 1996) will use this information, and any new data generated in the coming months, and present a detailed analysis and documentation for a waste rock reclamation alternative.

FINANCIAL ASSESSMENT:

The RDGP funding request includes:

Construction	\$244,000
Salaries and wages (Powell County)	\$ 2,250
Fringe benefits (Powell County)	\$ 150
Travel (Powell County, inspection, review, administration)	\$ 750
Miscellaneous (film and tapes)	<u>\$ 850</u>
TOTAL	\$248,000

Based on updated information, RDGP estimates the cost of reclaiming the on-site waste rock materials to be \$300,000. This amount is recommended for funding.

ENVIRONMENTAL EVALUATION:

If the reclamation is performed properly, no long-term adverse impacts are expected. As with any reclamation/ construction project, there will likely be short-term impacts including erosion, dust, soil compaction, and destruction of local vegetation. Standard reclamation practices such as stormwater BMPs, watering for dust, and revegetation will adequately mitigate these impacts. A stormwater discharge permit, a 310 permit, and a 404 permit may be necessary.

PUBLIC BENEFITS ASSESSMENT:

The public’s natural resources in the Little Blackfoot River drainage will be conserved through the prevention of further contamination of surfacewater, groundwater, and adjacent wetlands from the high concentration of metals in the waste rock piles and dumps. By reclaiming the water quality, wildlife and aquatic life in the area will be maintained. In addition to improving water quality, the visual quality will also be improved by stabilizing waste rock slopes and preventing further erosion.

Completion of Phase II will benefit the human environment by protecting the public health, safety, and welfare of Montanans and eliminating the hazard of direct contact. Surrounding land uses will be maintained; area ranch lifestyles will be less threatened as ranchers may continue to utilize water sources for irrigation purposes.

The project will provide direct economic benefits by securing the recreation values of the Little Blackfoot River corridor. By securing the water quality, native fisheries, visual quality, and historical integrity of the site, the project will stimulate recreation opportunities.

RECOMMENDATION:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 6

APPLICANT NAME: MILE HIGH CONSERVATION DISTRICT

PROJECT/ACTIVITY NAME: Highland Mill Reclamation

AMOUNT REQUESTED: \$ 293,992

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 2,592	Applicant
\$ 39,000	USDA Forest Service
\$ 142,000	Mine Waste Technology Center-MSE
\$ 17,000	Reclamation Research Unit-Montana State University
\$ 1,422	USDA Natural Resource Conservation Service

TOTAL PROJECT COST: \$ 460,084

RECOMMENDED FUNDING: \$ 258,070

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

An environmental problem exists at the historical Highland Mill site located approximately 11 miles south of Butte in the upper portion of the Middle Fork of the Moose Creek drainage, on land administered by the U.S. Forest Service (SW¼ of the SE¼ of the SE¼ of Section 36, Township 1 North, Range 8 West).

The problem stems from mill tailings that were deposited in a draw during the operation of the mill from 1937 until 1942. The tailings contain high concentrations of arsenic and copper that are slowly eroding and degrading range, watershed, and wildlife resources. In addition, the potential exists for significant movement of the tailings if a major storm event or rapid snowmelt occurs.

It is the intent of the Mile High Conservation District (MHCD), in cooperation with the U.S. Forest Service (USFS), the Mine Waste Technology Center, and the Reclamation Center at Montana State University (MSU), to reclaim the site and return it to a natural and productive state. MHCD is responsible for the project but will enter into a Letter of Agreement with USFS to implement and oversee the project.

The goal of the project is to remove the tailings from the draw to a nearby area that is less prone to erosion, where they will be contained and possibly neutralized. The project will reestablish the natural flow of water in the draw and the associated riparian habitat.

In the summer of 1996, all parties began working at the site to validate the final project plan. Bidding for developing the containment area and removing the tailings from the draw would occur in late June 1997. Actual reclamation activity at the site would start in July 1997 and be completed within three months. The project would be completed in October 1997.

TECHNICAL ASSESSMENT:

The Highland Mill site exhibits high concentrations of arsenic and copper that pose threats to human health and the environment. The reclamation work plan, submitted by the applicant, assesses the levels of these and other contaminants and provides a comparative analysis of a set of reclamation alternatives based on cost, effectiveness, and implementability. The analysis is directed at the site's solid media (mill tailings) and discusses the advantages and disadvantages of each reclamation alternative. Based on the three mentioned factors, the preferred alternative is to excavate, haul, and dispose of the contaminated tailings in an unlined repository. The tailings would be limed, if necessary, and the repository capped, mulched, fertilized, and seeded. The construction methods are standard practice and should not present unusual difficulty, if performed by experienced contractors. The repository will be located approximately 1,000 feet west of the tailings' present location. An alternative site is approximately 1,000 feet to the northwest of the tailings.. The hydrological pattern of the drainage would be reestablished and the entire area revegetated with species indigenous to the area.

The information presented in the application is sufficient to justify funding of the project. In addition, before project start-up, another sequence of activities and investigations is scheduled to further detail site conditions, waste characteristics, and cost. This information, presented in the form of an engineering evaluation and cost analysis (EECA) document, will guide the final design and construction phases.

The proposal is well documented and organized. It is a high priority for use of RDGP funds. USFS personnel, the Mine Waste Technology Center, MSU's Reclamation Research Unit, Mile High Conservation District, and Headwaters RC&D possess the resources and qualifications necessary to implement the project successfully. The project represents a good example of multiagency cooperation in the planning, design, reclamation, and funding of abandoned hardrock mine sites.

FINANCIAL ASSESSMENT:

The RDGP budget request is broken down into the following categories.

Salaries and wages (bookkeeper for Mile High)	\$ 900
Employee benefits	\$ 225
Contracted services (construction)	\$292,867
TOTAL	\$293,992

The budget is well documented and reasonable for the type of work proposed. The requested amount of RDGP funds (\$293,922) inadvertently included design and material costs for portions of the stream restoration portion of the project being conducted by MSE, Inc. These costs, subtracted from the original request, reduce the recommended level of funding to \$258,070. This entire amount will be applied toward construction activity.

ENVIRONMENTAL EVALUATION:

Short-term impacts would likely occur during construction activity. Fugitive dust, noise, soil compaction, and vegetative destruction are expected but are easily mitigated through dust and noise suppression techniques and revegetation. Based on present information, the tailings are not expected to cause any long-term impact to the environment, but the neutralization methods must be reviewed and evaluated for long-term effectiveness. Periodic maintenance of the tailings

may be necessary to prevent mobilization of the contained contaminants. Depending on the final drainage design, permits may have to be obtained.

PUBLIC BENEFITS ASSESSMENT:

Implementation of the project is expected to have direct benefit to the Moose Creek drainage area's water, riparian habitat, fishery, wildlife, and recreation resources. Elimination of threats to, and enhancement of, public resources benefits all Montanans. Moderate economic impact will be realized by construction contractors and suppliers.

RECOMMENDATION:

A grant of up to \$258,070 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 7

APPLICANT NAME: BUTTE-SILVER BOW LOCAL GOVERNMENT

PROJECT/ACTIVITY NAME: Upper Clark Fork Basin: Superfund Technical Assistance

AMOUNT REQUESTED: \$ 99,832

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 136,927 Applicant

TOTAL PROJECT COST: \$ 228,459

RECOMMENDED FUNDING: \$ 91,532

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The principal purpose of this project is to sustain the efforts of Butte-Silver Bow, Anaconda-Deer Lodge, Powell and Granite Counties, and other local governments in the upper Clark Fork River basin to coordinate and manage Superfund activities. The project allows local governments and citizens (who possess limited financial and technical resources) to hire an individual with the independent analytical capabilities to evaluate scientific reports, remedial designs, and long-term plans. Information communicated to local leaders and citizens will enable them to participate in the Superfund decision-making process effectively.

The Superfund process in the upper Clark Fork River basin is ongoing and will by no means be complete by 1997. In fact, major decisions related to the remediation of many of the area's most serious environmental problems, such as the Butte priority soils and streamside tailings along the entire stretch of the upper Clark Fork, will finally be under full consideration in the 1997-1999 time period. Consequently, the services and technical assistance provided through this grant will continue to be vital.

The State of Montana's support and commitment to help these four counties, as demonstrated through this grant program, are critical. The counties are struggling to attain a meaningful role in the decision-making process. The upper Clark Fork River basin is a prime resource, and the eventual cleanup, reclamation, and/or mitigation of the mineral development impacts that occurred in the area over the past 116 years are a great challenge for all of Montana. Also, natural resource damage claim litigation is ongoing between the State of Montana and the Atlantic Richfield Company (ARCO).

The cleanup of this river basin will have a tremendous positive impact on the region within and surrounding the basin, and it is likely that the decisions made will set strong precedents for cleanup activities elsewhere in the state and nation.

TECHNICAL ASSESSMENT:

Funds would be used to extend the services of a technical specialist. This individual, hired by Butte-Silver Bow, advises the four county governments on technical issues related to Superfund cleanup activities in the Clark Fork River basin. The position has unquestionably been valuable in informing local leaders and county residents of the many and complex Superfund activities occurring in the basin. The legislature has acknowledged this need and funded two previous RDGP grants for this position in 1991 and 1995 (for a total of \$153,622).

The major issue surrounding the current proposal is whether the state should continue to support the position with RDGP funds or whether the cost should be absorbed by the counties, which is more a policy decision than a technical matter. RDGP policy states that continual funding of ongoing projects and programs is not the intent of RDGP. The relatively small investment by the state thus far, however, and the significance of impact felt in the Clark Fork River basin lean toward recommending this request for funding. The applicants have committed a significant amount of their own money to the current effort (\$136,927), which gives some idea of its importance to the counties during the upcoming 1997-99 timeframe. A recommendation to fund, with the condition that future funding of the position come from local resources, may be appropriate.

FINANCIAL ASSESSMENT:

The RDGP funds requested total \$99,832. The technical specialist position would be hired at the rate of \$15 per hour, which is a bargain given the complexity of the job. Added to this are benefits at 18 percent of annual salary; laboratory, consultation, and printing costs, which total \$8,300; supplies and materials, \$1,200; communications, \$1,200; travel, \$4,000; and miscellaneous, \$2,500. The costs are well justified, with the exception of laboratory, consultation, and printing costs (totaling \$8,300). The undemonstrated need for these costs warrants their exclusion from the grant request. It is not certain that these costs will ever be incurred.

ENVIRONMENTAL EVALUATION:

Funding would be used to hire an individual for continued technical evaluation of Superfund activities in the Clark Fork basin. There are no environmental impacts associated with this action.

PUBLIC BENEFITS ASSESSMENT:

The public benefit of this project could be extremely valuable to the 54,000 citizens (according to the 1990 census) of the four affected counties. Damage to the area's resources is extensive and complex, solutions are even more complex, and in many cases solutions have not yet been identified. The Superfund process demands active involvement in its decision making by those affected. The project will assist significantly in helping to inform local governments and their citizens on difficult technical issues affecting not only the governments of Butte-Silver Bow, Anaconda-Deer Lodge, Powell County, and Granite County, but also the region and the state.

RECOMMENDATION:

A grant of up to \$91,532 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 8

APPLICANT NAME: MONTANA BOARD OF OIL AND GAS CONSERVATION

PROJECT/ACTIVITY NAME: 1996 "A" Orphaned Well Plug and Abandonment and Site Restoration
1996 "B" Orphaned Well Plug and Abandonment and Site Restoration
1996 "C" Orphaned Well Plug and Abandonment and Site Restoration

AMOUNT REQUESTED: \$ 900,000 (Total for three applications)

OTHER FUNDING AMOUNTS AND SOURCES:
\$ 20,000 Applicant (Total for the two recommended applications)

TOTAL PROJECT COST: \$ 374,222 (Total for the two recommended applications)

RECOMMENDED FUNDING: \$ 164,222 for 1996 "A"
\$ 190,000 for 1996 "B"
\$ 0 for 1996 "C"

TOTAL \$ 354,222

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The purpose of this grant request is to provide funding (a) to plug and abandon orphaned oil and gas wells properly, and (b) to perform the surface reclamation. The wells are uneconomic and have the potential to cause damage to subsurface formations, the state's water, and the surface around each well.

The Board of Oil and Gas Conservation will eliminate the threat of contamination by soliciting bids to plug and abandon the wells. Under the supervision of the board's staff, the successful bidder will properly plug and abandon each well, dispose of and/or remediate contaminants, and reclaim the surface location.

The wells produced oil and/or gas in the past. The operators could no longer afford to produce the wells, and the wells were shut in. The companies' assets will not cover the liabilities to creditors, leaving the operators insolvent. Since the operators are currently insolvent, responsibility for the wells and any potential environmental damage rests with the Board of Oil and Gas Conservation and the state. The wells will be properly plugged and abandoned when funding is made available.

The orphaned wells are located throughout Montana. In most cases the wells that present the highest potential to damage the environment because of leaking or loss of mechanical integrity will be plugged first.

The project is estimated to take 24 months. The work will generally begin during the first suitable field season following the availability of funding.

TECHNICAL ASSESSMENT:

The Board of Oil and Gas Conservation (board) submitted three grant applications ("A," "B," and "C") to plug and abandon 46 inactive oil and gas wells. The only differences in the applications are the number of wells to be plugged, the estimated cost of plugging individual wells, the locations, and the degree of environmental risk associated with each well. Also, application "B" includes \$10,000 for the costs of well markers and well head equipment, whereas applications "A" and "C" do not. Each of the applications is for \$300,000 (total \$900,000) with the board contributing a total of \$10,000 in Damage Mitigation Account funding for each application (total \$30,000). RDGP review consisted of evaluating the financial, technical, and environmental feasibility of each application; need and urgency; public benefits; and cost-effectiveness.

The evaluation and review considers, first, that the board under state law (Section 90-2-1113 MCA) is allocated \$600,000 each biennium for oil and gas reclamation activities. Of the board's four applications, the Balco Disposal Facility is the highest priority for cleanup and should be allocated the \$600,000. There are no provisions in this law that authorize RDGP to evaluate applications falling within this \$600,000 priority funding limit for feasibility, need and urgency, or environmental impacts. The Balco Disposal Facility is discussed beginning on page 1.

The review and evaluation presented here concentrate on the feasibility, need and urgency, and environmental aspects of well plugging applications "A," "B," and "C" relative to all RDGP applications, (other than for Balco) and give no preference to these three applications.

None of the 46 wells evaluated demonstrates, in the applications, a severe threat to human health or the environment. This is not to conclude that the wells do not present a potential threat. However, the applications provide little detail as to the extent and nature of this threat. Based on the information submitted, and in comparison with other competing applications documenting severe threats to human health or the environment, the board's applications, "A," "B," and "C" do not rate a high priority. Within each application, the priority differs substantially between wells. In other words, all wells in "A" are not of the same priority. Some appear to represent a greater threat to human health and safety and the environment than other wells. The same is true for wells in applications "B" and "C." In evaluating the priority of plugging each well, the department considered the proximity of the well to surface water; the depth of the well; leakage of oil, gas, or water to the surface; and the age of the well.

The review, then, based on the information submitted, attempts to distinguish sites falling into the \$600,000 priority funding category mentioned earlier, sites that do not fall into that category but merit funding and sites that do not appear to merit funding at this time.

Application "A" - This proposal contains 15 wells, 14 of which are located in Yellowstone County, and one of which is located near Sidney in Richland County. With the exception of the Richland County well, all wells are approximately 1,000 feet deep and were drilled by Lakota Energy Company in 1979. The Richland County well (Iverson #1) well is 12,678 feet deep and was drilled in 1973 by Continental Oil. (The well was transferred to Juniper Petroleum Corporation in 1977.)

From a hydrological standpoint, focusing primarily on threats to groundwater or surface water, the Iverson #1 well and six wells in Yellowstone County located in the Clarks Fork Yellowstone floodplain (Section 23, Township 2 South, Range 4 East) are higher priority than the remaining 8 wells. The remaining 8 wells in application "A," unless new or more detailed information is gathered, rate a secondary priority.

Application “B” - This proposal contains 15 wells, 7 of which are located in the Kevin-Sunburst Field, Toole County, and 8 of which are located in Yellowstone County. The majority of these wells evidence no leaks of oil, gas, or water to the surface. The Yellowstone County wells are fairly shallow and were drilled in 1979 by Lakota Energy. The Kevin-Sunburst wells, which are much deeper, were drilled in the 1920s and therefore are likely to have higher potential for problems. The Kevin-Sunburst wells in Toole County are higher priority. The 8 Yellowstone County wells are secondary priority, based on the factors previously mentioned.

Application “C” - This proposal contains 16 wells, 8 in Glacier County, 7 in Toole County, and 1 in Hill County. They are all deep wells that were drilled between 1930 and 1971, and they may be troublesome. Most do not evidence surface leaks of oil, gas, or water. If pressures in these areas rise because of waterflood unit operations, the wells may fail. If this happens, the extent that the companies that are conducting waterflood operations would be liable is unclear. It is unlikely that all of these wells need re-entering for plugging, but, due to the lack of downhole information on pressures, water quality, and well condition, the risk they pose cannot be determined. Some of these wells may need plugging. All 16 wells are considered secondary priority.

In summary, based on the information presented, most of the 46 wells proposed for plugging cannot be justified as a high priority because they do not evidence severe threats to groundwater or surface waters. Mobilization costs, cost of data gathering and analysis, bankrupt responsible parties, and landowner pressure to some extent perhaps contribute to justification by the board to properly plug and abandon the orphaned wells listed. As stated earlier, these influences rate lesser importance in terms of RDGP goals and objectives.

Many of the wells were drilled since board regulations governing oil and gas became effective (in 1954). There is a responsible party for each of the wells, but a determination of financial viability has not been submitted. A detailed assessment of both company and individual assets should be conducted by BOGC before any expenditure of RDGP funds.

FINANCIAL ASSESSMENT:

The total RDGP funding request for applications “A,” “B,” and “C” is \$900,000. The estimated costs to plug an individual well are derived from bids received on similar BOGC projects and are therefore considered reasonable. The basic breakdown of cost for each of the three applications is the same as that shown in connection with Application “A.”

Application “A”

Fringe benefits	\$ 1,949
Contracted services*	290,554
Communications	1,000
Travel	5,997
Miscellaneous	<u>500</u>
TOTAL	\$300,000

*Application “C” lists \$280,554 for this category and \$10,000 for supplies and materials.

Seven of the 15 wells rate a higher priority and should be plugged (the Iverson #1 in Richland County and the 6 wells situated in the Clarks Fork Yellowstone floodplain in Yellowstone County). Information submitted does not indicate that the remaining 8 wells are a high priority. The total amount recommended for funding is \$164,222.

Application "B" - The 7 wells located in Toole County rate higher priority and are recommended for funding totaling \$190,000. The remaining 8 wells in Yellowstone County are lower priority.

Application "C" - None of the wells in application "C" is recommended for funding.

The priority and funding amounts for applications "A," "B," "C," and the Balco Disposal Facility are ultimately established pursuant to Section 90-2-1113 (2) (a-c), MCA. For reference, those provisions state:

(2) (a) Subject to the conditions of this part, the department shall give priority to grant requests, not to exceed \$600,000 in total for the biennium, from the board of oil and gas conservation. The board of oil and gas conservation shall use a grant that received priority under this subsection (a) only for oil and gas reclamation projects. A grant may not be used for personnel costs or general operating expenses of the board of oil and gas conservation.

(b) Any unobligated fund balance of a grant that received priority under subsection (2)(a) remaining at the end of the current biennium must be included as part of the \$600,000 limitation for the next biennium.

(c) The priority given to the board of oil and gas conservation under subsection (2)(a) does not preclude the board of oil and gas conservation from submitting additional grant requests. The department shall evaluate additional grant requests from the board of oil and gas conservation in accordance with the provisions of subsection (1).

Of the \$1.2 million total in grant requests received from BOGC, RDGP has recommended that \$954,222 be funded as follows:

	<u>Total Requested</u>	<u>Total Recommended</u>
Balco Disposal Facility	\$ 300,000	\$600,000
Application "A"	300,000	164,222
Application "B"	300,000	190,000
Application "C"	<u>300,000</u>	<u>0</u>
TOTAL	\$1,200,000	954,222

It is recommended that (a) the Balco site funding of \$600,000 be considered priority funding according to the provisions of Section 90-2-1113 (2)(a), MCA, and (b) the priority of applications "A," "B," and "C" is subject to the provisions of Section 90-2-1113 (2)(c), MCA (no priority).

At the time of this review (October 1996), the board has \$600,000 in unobligated priority grant funds from the previous biennium. It also has \$468,011 in nonpriority RDGP grant funds that remains unobligated.

ENVIRONMENTAL EVALUATION:

No long-term adverse environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and destroyed vegetation on access routes will be reclaimed upon project completion, and any debris will be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust, emissions from combustion engines) would be minimal provided that equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition. If the sites involve cleanup and disposal of drilling fluids, oil sludges, brine wastes, or other contaminants, these materials must be identified and characterized and this information used to develop site-specific reclamation plans. Depending on the material and contaminants

encountered, remedial action may involve burning, burial, land farming, and addition of soil amendments for materials disposed of on-site, or it may involve hauling materials to a licensed off-site landfill or waste disposal facility. If a site poses unusual difficulty or necessitates remedial actions not normally implemented, by the board, appropriate regulatory or reclamation experts would need to be contacted.

PUBLIC BENEFITS ASSESSMENT:

Improvement and protection of water, vegetation, and soil resources are the primary benefits of this project. These benefits will be realized mainly by area farmers and ranchers to an unknown extent. Waste of oil and gas reserves may also be prevented. Moderate economic impact will be felt by oil and gas plugging contractors, suppliers, and subcontractors.

RECOMMENDATION:

DNRC recommends \$164,222 for plugging wells associated with the 1996 "A" application; \$190,000 for plugging wells associated with the 1996 "B" application; and no funding for plugging wells associated with the 1996 "C" application. This recommendation is contingent upon DNRC approval of the project scope of work and budget. If, during the term of the grant, the board demonstrates that wells other than those recommended for funding represent a greater threat to people or the environment, those wells can be substituted and receive funding.

PROJECT NO. 9

APPLICANT NAME: CARBON COUNTY

PROJECT/ACTIVITY NAME: Dry Hydrant Demonstration Project

AMOUNT REQUESTED: \$ 157,579

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 32,848	U.S. Natural Resource Conservation Service
\$ 210,000	Local fire departments

TOTAL PROJECT COST: \$ 400,427

RECOMMENDED FUNDING: \$ 157,579

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Water is the single most valuable resource a firefighter can utilize in fire suppression. Readily accessible sources of water are a must for rural departments in providing protection to the vast area of the state. All too often, rural firefighters lose the battle of time while accessing water. Dry hydrants, which are permanent suction lines installed in a pond or stream, can provide a faster, more efficient source of water for these emergency efforts.

Major fire incidents over the past decade have drawn attention to the importance of rural fire protection. The million-dollar Hawk Creek Fire in Mussellshell County in 1984, the firestorm that swept Blaine County in 1991, and the

seemingly endless summer of 1994 in Lincoln County have provided a wake-up call for Montana residents. Volunteer fire companies diligently respond to our calls, but are often handicapped by the lack of resources to do the job. Strategic, dependable access to water is the most commonly cited need of rural fire departments.

This demonstration will introduce the concept of dry hydrants to Montana residents through a statewide project. Beginning in the spring of 1997, departments will install 280 hydrant sites in critical locations. All Montana residents will be informed of the project through a statewide media campaign. Data from hydrant use in the first year will be collected and a cost/benefit analysis compiled to show the effectiveness of the new system. The project is scheduled for completion by December 1998.

This proposal seeks \$157,579 in funding to obtain the necessary hardware to install these sites. The cooperative effort of rural departments, local governments, and private landowners will be utilized to implement this project. The project will be coordinated by the Beartooth RC&D Area with the assistance of the other RC&D programs.

TECHNICAL ASSESSMENT:

Rural fire protection depends on readily accessible water sources and rapid fire-fighting response capabilities. According to the applicant, millions of dollars (an estimated \$18 million in 1994) in Montana forest, range, cropland, farmsteads, homes, and rural structures are burned annually. Rural fire departments respond to wildfires and structural fires involving highly valued resources located in sparsely populated areas. Rural fire departments annually fight between 4,000 and 6,000 fires. Suitable water supplies are crucial for effective rural fire-fighting efforts. Most rural fire efforts are limited by water availability and local capabilities to transport water to fires.

This dry hydrant demonstration project would increase access to water supplies and improve fire-fighting effectiveness in up to 56 rural fire districts. Dry hydrants provide reliable year-round water supplies, which enhances rural fire-fighting capacities, reduces suppression costs, and minimizes streamside damage. This project would provide statewide demonstrations of the operation and effectiveness of dry hydrants through installing five dry hydrants in each of Montana's 56 counties (280 total hydrants). These widespread demonstrations would generate statewide experiences with dry hydrants, which would be magnified through coordinated public awareness actions and an economic analysis of dry hydrant operations.

In a preliminary survey of rural fire districts conducted by the applicant, over half of the districts expressed great interest in installing local dry hydrants. Because over half of all rural fire calls require water shuttles to deliver additional water, increased local water availability is highly valued and would be expected to improve local fire protection significantly. Four Montana fire districts, listed below, have already begun local experiments with dry hydrant systems.

<u>Area</u>	<u>No. Of Dry Hydrants</u>
Roosevelt County	11
Belgrade	20
Lincoln County	15
Butte-Silver Bow County	6

A properly designed dry hydrant system is expected to improve a location's fire insurance ratings (from an Industrial Standards Organization [ISO] rating of 9 or 8 to an ISO rating of 7 or 6), providing substantial reductions in resident fire insurance premiums and an increased level of local resource protection.

Based on other states' experiences, this project is both technically feasible and widely applicable. The wide applicability is also shown in the substantial financial commitments from participating local fire districts in Montana.

FINANCIAL ASSESSMENT:

The grant would fund 280 dry hydrant kits that could be installed by 56 local fire districts. The RDGP grant request for \$157,579 would be matched by local fire district installation work and local materials, resulting in a total project budget of \$400,427. The matching commitment helps demonstrate the need and importance of the project to local districts. The estimated average cost of an installed dry hydrant would be \$1,400, consisting of \$750 in materials and \$650 in labor and contracted services. The grant would provide for: (a) \$500 of each hydrant's \$750 material costs, (b) engineering of hydrant design specifications for Montana conditions, and (c) project coordination. The ownership and maintenance of the 280 installed dry hydrants would reside with the local fire districts.

ENVIRONMENTAL EVALUATION:

Sustained beneficial and long-term environmental benefits, such as reducing vegetation loss and soil erosion from fires, would result from improved local fire-fighting capabilities. Repeated water pumping disturbances at undeveloped water supply sites could be avoided. Wildfires are a major cause of vegetative destruction and subsequent erosion. Reducing the spread and intensity of wildfires would conserve natural resources. Short-term construction impacts from dry hydrant development may occur, but these are easily planned for and mitigated. All sites would be properly permitted and appropriate mitigating measures used. Installation of dry hydrants would reduce future streamside disturbances from unplanned water drafting during fire-fighting emergencies.

PUBLIC BENEFITS ASSESSMENT:

Public benefits would include (a) reduced natural resource losses to fires, (b) improved water quality, (c) improved public safety and protection, (d) reduced fire-fighting costs, (e) improved long-term water hydrant supplies, (f) improved fire district capabilities, and (g) reduced insurance costs. These public benefits are substantial and long-term.

RECOMMENDATION:

A grant of \$157,579 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 10

APPLICANT NAME: TOOLE COUNTY

PROJECT/ACTIVITY NAME: North Toole County Reclamation Project

AMOUNT REQUESTED: \$ 296,202

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 31,988	Applicant
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TOTAL PROJECT COST: \$ 71,988

RECOMMENDED FUNDING: \$ 40,000

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Oil development and production, in the north-central Toole County Kevin-Sunburst field, started in 1922. The field is located approximately 15 miles north of Shelby along Interstate 15 and surrounding Kevin on the Oilmont Highway. When regulation became effective in 1954, several thousand wells were already in place. The development area encompassed over 13,000 acres. Environmentally safe disposal of wastes such as waste oil and brine was not yet regulated by law. Wastes such as these were commonly dumped on the land surface.

As oil production decreased, population also decreased, leaving behind many abandoned facilities. Many of these dilapidated structures and the remains of oil production equipment are still scattered over the land. Soils contaminated by past dumping of wastes remain unproductive. The condition of this oil field is a significant threat to public health, soil productivity, water quality, and economic opportunity in the area. Removal of structural debris and reclamation of impacted soils are needed.

The purpose of the North Toole County Reclamation Project, coordinated through the county health department, is to accomplish reclamation of this oil field by removing abandoned structures and debris from impacted sites, assessing technologies for reclaiming oil-contaminated soils, and applying these technologies to a variety of sites. This is an ongoing project to accomplish the dismantling and removal of structures and associated oil-field equipment, the reclamation and revegetation to productive range or croplands, and the development of a planning guide to facilitate future projects throughout Montana.

TECHNICAL ASSESSMENT:

Of the 12 sites identified for reclamation, 7 have been submitted to and are awaiting a responsible party determination by the Board of Oil and Gas Conservation (BOGC). The remaining 5 still require both a title search and a subsequent responsible party determination by BOGC. Several of the 12 sites evidence sludge pits and oil tanks that are good candidates for RDGP funds.

On previous grants, Toole County has done a good job of eliminating the overall impacts created by past oil and gas operations. It is becoming increasingly difficult, however, for Toole County to find landowners willing to allow reclamation activities on their property. The project may be nearing its life expectancy within the northern Toole County area. Evidently, relatively few sites in other parts of the county need attention. A suggested approach would be to identify

these other sites and include the most seriously impacted ones in this grant request. In previous grants, the applicant has been granted the flexibility to substitute sites based on changing circumstances, such as the discovery of more seriously impacted sites.

Few difficulties, if any, are expected in identifying and qualifying 12 sites for cleanup. It is conceivable that the reluctance shown by a few area landowners will lessen as they become more familiar with and informed about past project results.

The work done in the past by Toole County has received exceptional support from both industry and area landowners.

It is recommended (a) that Toole County be approved funding in an amount sufficient to reclaim 12 sites, and (b) that the county be granted the flexibility to substitute sites if needed. This amount would be established to reflect the current and anticipated balance of funds remaining from previous grants. (See Financial Assessment for detail.)

FINANCIAL ASSESSMENT:

As shown below, Toole County, at the time of this review, has a balance remaining in RDGP grant funds awarded for previous RDGP projects.

Contract RIT-96-8602	\$295,246
Contract RIT-94-8582	<u>64,939</u>
Total remaining balance	\$360,185

Some expenses, which are still outstanding, are estimated as follows.

Unpaid construction work in 1996	\$180,000
Unpaid construction oversight	<u>20,000</u>
Obligated prior grant funds	\$200,000

Thus, an estimated \$160,185 in prior grant funds is unobligated.

Based on budget estimates revised as the result of a July 1996 phone conversation with Toole County officials, the 12 sites can be designed and reclaimed for a total cost of less than \$200,000. (Earlier estimates in the application were revised downward based on bid tabulations for the current work in progress.) The \$200,000 amount is reached by combining the unobligated \$160,185 from prior grant funds with \$40,000 from the current grant request. This recommendation is contingent upon BOGC approving the qualifying sites with regard to responsible parties.

ENVIRONMENTAL EVALUATION:

Several short-term impacts would be likely to result from reclamation of these sites. Dust, noise, and soil and vegetative disruption could result from use of heavy equipment. Other impacts would result from the disposal of oil sludge, burning of debris, excavation of burial pits, disposal of contaminated soils, and saline seep reclamation. Impacts from all of these activities could be kept to acceptable levels through using best management practices (BMPs), incorporating approved reclamation methods in the bid plans and specifications, and continuing inspection of cleanup progress by the applicant. The expected impacts would be of short duration, provided the project is carefully designed and implemented. While complete prevention of impacts would not be possible, those that would result are expected to be moderate at worst.

PUBLIC BENEFITS ASSESSMENT:

The project would reclaim acreage damaged by past oil and gas industry activities. The benefits to Montanans include reduced health and safety hazards, improved quality of soil and water resources, and enhanced economic opportunity on reclaimed lands.

RECOMMENDATION:

A grant of up to \$40,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 11

APPLICANT NAME: MONTANA BOARD OF OIL AND GAS CONSERVATION

PROJECT/ACTIVITY NAME: 1996 "B" Orphaned Well Plug and Abandonment and Site Restoration

AMOUNT REQUESTED: \$ 300,000

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 10,000 Applicant

TOTAL PROJECT COST: \$ 200,000

RECOMMENDED FUNDING: \$ 190,000

Please refer to the project writeup on page 22 of this report.

PROJECT NO. 12

APPLICANT NAME: MONTANA STATE UNIVERSITY-RECLAMATION RESEARCH UNIT

PROJECT/ACTIVITY NAME: Reclaimed Metal Mine Lands: Agricultural Uses and Restrictions

AMOUNT REQUESTED: \$ 129,114

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 50,354 Applicant

TOTAL PROJECT COST: \$ 179,468

RECOMMENDED FUNDING: \$ 129,114

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The historic mining and processing of metallic minerals in Montana through environmentally insensitive methods have resulted in a legacy of soil and water contamination. Many mine and smelter sites contain waste materials bearing metallic environmental contaminants such as lead, arsenic, and cadmium. These sites are presently in the process of being reclaimed through various approaches, including capping and in-place revegetation. Revegetation of metal mine sites is often the ultimate objective of reclamation efforts to reduce erosion and prevent the release of contaminants to the environment. Once these areas are reclaimed, their potential uses remain uncertain. In Montana, many of these sites may be utilized for agricultural purposes: livestock grazing; alfalfa, hay, and small grain production. Despite the aesthetic and environmental enhancement of vegetation establishment in areas impacted by mining, several recent studies have found that vegetation can accumulate metals in plant tissue and on plant surfaces, resulting in an increased risk of metal exposure to terrestrial receptors and grazers. Since grazing and crop and forage production are the intended end uses of many reclaimed mine land areas, it is important to evaluate the potential impact of establishing vegetation on reclaimed metal mine lands to agricultural resources.

The overall goal is to evaluate vegetation metal loadings in reclaimed and adjacent unreclaimed mining areas through (a) reviewing the databases that have been generated for metal mine areas that have been reclaimed, and (b) collecting and analyzing site-specific vegetation and soil materials from areas for which sufficient data are lacking. Vegetation metal burdens will be interpreted relative to National Research Council Guidelines (1980) for forage quality for grazing animals. Metal concentrations in grain will be evaluated separately in terms of U.S. Food and Drug Administration Guidelines for dietary trace element concentrations. Soil samples will also be evaluated for metals. Research has demonstrated that grazing animals can consume up to 1.5 kilograms of soil per day as a consequence of vegetation utilization. The importance of each medium, soil and vegetation, will be evaluated in terms of reclamation approach (in-place revegetation versus capping) for metal accumulation in grazing animals. These interpretations will be used to assess which land uses, if any, will be restricted following reclamation and revegetation of these metal-contaminated soils and wastes.

The responsible organization will be the Reclamation Research Unit, Montana State University.

Existing databases and field sampling sites will be selected with the assistance of state and federal agencies across the state of Montana. This research is intended to be broad in scope and not specific to a single mine, mill, or smelter site. The time frame is 24 months from funding procurement.

TECHNICAL ASSESSMENT:

For this research to be useful to ongoing reclamation efforts in Montana, close coordination with the Department of Environmental Quality (DEQ) and others is needed.

The applicant has correctly identified reclamation within the Clark Fork Superfund sites as the highest priority for research. The U.S. Environmental Protection Agency (EPA,) DEQ, and the Atlantic Richfield Company (ARCO) have extensive data that should be analyzed before this study is initiated. The same sampling protocols should be used, wherever possible, along with the same sites and vegetation species. Possible inclusion of other metals, e.g., copper, should also be evaluated. The applicant also needs to identify and compare natural background concentrations of heavy metals in area soils with elevated levels. In many areas, soils have relatively high concentrations of heavy metals that are not the result of contamination. This must be considered when trying to determine the appropriate vegetation re-establishment methods of reclaiming contaminated sites. With close coordination, the information developed with this research should complement current efforts.

The applicant has identified contamination of soils around East Helena as its second priority for research. Again, close coordination with ongoing efforts is needed. As much as possible, the same protocols that are used in the Clark Fork sites should be used for this site.

In many areas of Montana, reclaimed lands will be grazed by wildlife, including deer and elk. Some discussion of this use should be provided.

FINANCIAL ASSESSMENT:

The RDGP budget includes:

Salaries and wages	\$ 66,505
Employee benefits	\$ 13,747
Laboratory services	\$ 37,000
Supplies and materials	\$ 900
Communications	\$ 275
Travel	\$ 4,084
Rent and Utilities	\$ 4,653
Equipment	\$ 0
Miscellaneous (copies, printing, publishing fees, sample shipping)	\$ 1,950
TOTAL	\$129,114

The costs appear reasonable. University indirect costs are pledged as matching funds for this grant. These are not eligible for grant funds.

ENVIRONMENTAL EVALUATION:

This is a research project and will involve field sampling and lab work. Adverse environmental impacts are not expected.

PUBLIC BENEFITS ASSESSMENT:

The goal of the research project is to provide needed information about the uptake of heavy metals by plants. This could benefit the public by either confirming that current reclamation methods are effective or identifying an area of concern that needs to be addressed before complete and long-term cleanup of sites occurs. If the research is conducted in close coordination with regulatory agencies and responsible parties, the benefits of this research should exceed its cost.

RECOMMENDATION:

A grant of up to \$129,114 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 13

APPLICANT NAME: MONTANA BUREAU OF MINES AND GEOLOGY

PROJECT/ACTIVITY NAME: Training for Environmentally and Economically Sound Resource Development

AMOUNT REQUESTED: \$ 76,043

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 29,249	Applicant
\$ 16,250	Fees from participants
\$ 6,950	Department of Environmental Quality

TOTAL PROJECT COST: \$ 102,171

RECOMMENDED FUNDING: \$ 49,722

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Since the discovery of mineral resources in Montana in the 1850s, most of the deposits have been found to be too small to be developed by the larger companies. Neither technology nor training has ever been available for the operators of small mines.

The objective of this program is to train small operators to develop a small resource successfully while preventing or eliminating any environmental impacts. In addition to providing hands-on training, a video of the program will be produced for future educational use by regulators, managers, and miners.

The training will be conducted by industry specialists under the direction of the Montana Bureau of Mines and Geology. A segment will be presented through the interactive telecommunications network, another segment at Montana Tech, and the remainder in the field on actual projects. Most field work will be in the Butte and/or Helena area.

Subject matter for the training will be scheduled as follows over a two-year period:

1. Cyanide Heap Leach (approximately 25 participants each session) 3 days each spring; 3 days each fall
2. Placer Exploration (approximately 25 participants each session) 6 days each spring
3. Placer Mine Design with Reclamation (approximately 25 participants each session) 6 days each summer
4. Acid Rock Drainage Prevention (approximately 25 participants each session) 3 days each winter

TECHNICAL ASSESSMENT:

Approximately 600 small miners are permitted annually by the Department of Environmental Quality (DEQ). Many of these small mine operators lack the knowledge, ability, or inclination to operate a mine prospect profitably. This often leads operators to make mistakes and take shortcut approaches to environmental protection. Ultimately many operations suffer economic failure, and the deposits are never totally developed. Each instance contributes to depletion of mineral deposits and often damages the environment.

The applicant, with the support of the mining industry, proposes that - by educating these small operators and encouraging the establishment of profitable businesses - economic failures and environmental degradation will be reduced. Such an approach makes sense if the methods and techniques increasing mine efficiency are at the same time environmentally sound. It also makes sense because of ever increasing changes in technology and environmental regulations.

Attendance and participation by small miners are critical to this project's success. It is probably safe to assume that the most interest will be generated among small placer mine operators. The Cyanide Heap Leach and Acid Rock Drainage Prevention portions of the proposal will appeal to a limited number of small miners conducting these types of operations.

An important aspect of this project is production of a video documenting the scheduled training sessions both in the field and in the classroom. The utility of this feature will be future educational use by regulators, the applicant, and small miners.

FINANCIAL ASSESSMENT:

The proposed RDGP budget includes:

Salaries and wages	\$ 18,290
Fringe benefits	\$ 5,653
Contracted services	\$ 12,000
Supplies and materials	\$ 4,500
Communications	\$ 9,600
Travel	\$ 6,000
Equipment rental	<u>\$ 20,000</u>
TOTAL	\$ 76,043

The cost-effectiveness of including the Cyanide Heap Leach and Acid Rock Drainage Prevention training sessions is questionable at this time. It is recommended that funding be reduced to cover the Placer Exploration and Placer Mine Design With Reclamation training sessions only. This would result in the following revised RDGP budget.

Salaries and wages, fringe benefits	\$ 11,972
Contracted services	\$ 6,000
Supplies and materials	\$ 2,250
Communications	\$ 5,000
Travel	\$ 4,500
Equipment rental	<u>\$ 20,000</u>
TOTAL	\$ 49,722

The revised budget matching amount required from the applicant (50 percent of salaries and benefits) equals \$5,986. Fees from participants should be reassessed in light of the reduced funding amount.

ENVIRONMENTAL EVALUATION:

The training session is designed to prevent environmental damage to resources. As such, any impact to the environment during the field training sessions is expected to be minimal.

PUBLIC BENEFITS ASSESSMENT:

The project cannot eliminate all future environmental damage from small mines, but it can certainly help. It may lead to mitigation of existing environmental problems at small mines and increased economic opportunity for the small mine industry. Because of reduced problems, it may also lead to decreased regulatory enforcement and expense for the state and federal agencies overseeing the small mine industry.

RECOMMENDATION:

A grant of up to \$49,722 is recommended for this project, for the placer mine and placer exploration portions of the project only, contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 14

APPLICANT NAME: WALKERVILLE, TOWN OF

PROJECT/ACTIVITY NAME: Walkerville's Plan for Development of Reclaimed Mine Properties

AMOUNT REQUESTED: \$ 113,600

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 5,500 Applicant

TOTAL PROJECT COST: \$ 46,200

RECOMMENDED FUNDING: \$ 40,700

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

From 1881 until 1959, the area in and around the town of Walkerville was the site of virtually continuous mining and milling activities. The Alice Mine was primarily mined for silver, and the amalgamation process used large amounts of mercury. The waste materials from the mining and milling processes were consolidated in dump areas, which are found throughout the community.

The project calls for the development of several reclaimed mine properties in the town of Walkerville. These include the further development of the recently completed Walkerville Baseball Field, development and installation of an exercise pathway on a mine waste repository, and completion of a basketball/tennis court on top of a cement-encapsulated mine waste dump.

All three components of this project are associated with past mining activities in the town of Walkerville. Walkerville has been the site of much reclamation activity; consequently, there are large vacant areas in Walkerville that have been reclaimed and are not presently in use. Building on these reclaimed sites will not only make the property usable again, but also will protect the reclamation work now in place. The Walkerville Project is important because it demonstrates the viability of redeveloping reclaimed land for beneficial use.

The town council, which represents the citizens of Walkerville, will be responsible for overseeing the development and completion of these projects. The three areas are located in the town of Walkerville.

The project is expected to begin in July of 1997 and will take approximately four months to complete. Once grant funds have been obtained, the town council will follow all Montana laws and appropriate town ordinances. The bids will be let according to these procedures.

TECHNICAL ASSESSMENT:

Walkerville received a 1993 RDGP grant (in the amount of \$50,000) to construct a new baseball field. The grant included fencing, water and power lines, sprinkler system installation, hydroseeding, and dugouts. The current request expands on this effort and includes additional ballfield development, a tennis/basketball court, and an exercise pathway. These improvements would increase the recreational opportunity for Walkerville and area residents.

The improvements proposed present no difficulty in implementing. Any threats to human health or the environment at these sites have been eliminated or reduced to acceptable levels under Superfund jurisdiction. Operation and maintenance of these sites would be conducted by the Town of Walkerville.

Completing the ballfield portion of the project would result in the area's being put to beneficial use. Lack of funds has prohibited completion of this recreation area. The improvements in the ballfield portion of the current request, particularly the restroom facilities, do not seem unwarranted. As a package, the requested improvements to the ballfield would enhance enjoyment of the facility by players, their families, and children. Construction of a basketball/tennis court and an exercise pathway, while nice, is not viewed as essential in replacing the old ballfield that was lost because of previous mining and reclamation activities.

The ballfield portion of the project is recommended for funding, although competing RDGP proposals to eliminate or reduce unacceptable risk to human health or the environment caused by mining activity would rate a higher priority.

FINANCIAL ASSESSMENT:

The total RDGP grant request is \$113,600. By category it includes:

1.	Playground equipment	\$ 22,000
2.	Fence, surface preparation	\$ 7,000
3.	Picnic tables, garbage cans, benches	\$ 3,000
4.	Bathroom facilities, septic system	\$ 37,500
5.	Dugout roofs	\$ 400
6.	Exercise pathway equipment	\$ 8,000
7.	Fence, gates, surface preparation of exercise pathway	\$ 33,000
8.	Tennis nets, basketball hoops	\$ 1,600
9.	Historical signage	<u>\$ 1,100</u>
	TOTAL	\$113,600

The total cost for items 1 through 9 can be reduced by \$21,900. (Walkerville updated the above costs per RDGP inquiry after the application deadline.) The total amount requested is now \$91,700.

Funding of items 1, 3, 4, and 5 would complete construction and development of the Walkerville softball facility funded by RDGP in 1993 for \$50,000. The exercise pathway and basketball/tennis court are viewed as “extras” and are not necessary for a well designed, functional facility. Recommended funding for the completion of only the softball portion of the project includes the following:

1.	Playground equipment	\$ 19,800
2.	Picnic tables, garbage cans, benches	\$ 3,000
3.	Bathroom facilities, fixtures, septic system	\$ 17,500
4.	Dugout roofs	\$ 400
	TOTAL	\$ 40,700

The Town of Walkerville will contribute \$5,000 toward the cost of playground equipment and \$500 for the costs of design and legal advertising for bids (total \$5,500).

Approval of funding in the amount of \$40,700 will allow completion of the softball facility. Walkerville does not have the financial resources to develop this public resource without grant assistance.

ENVIRONMENTAL EVALUATION:

Short-term environmental impacts may occur during site preparation and actual construction. Dust particles may increase during excavation and grading, but the impact can be mitigated by spraying water on affected areas. Runoff control measures to minimize erosion should also be examined. Permitting may include a storm water discharge permit. The sites have been encapsulated by the U.S. Environmental Protection Agency (EPA) and the Atlantic Richfield Company (ARCO). Failure of the caps over the long term could lead to release of hazardous materials. Walkerville should investigate its potential liability under such a scenario.

PUBLIC BENEFITS ASSESSMENT:

The main public benefit is increased recreational opportunity for Walkerville and area residents. Reclaimed properties will be put to a beneficial use, thereby completing the reclamation effort. Moreover, economic impact will be felt by local construction contractors and suppliers. Returning contaminated mining sites to a healthful and pleasing environment benefits all Montanans.

RECOMMENDATION:

A grant of up to \$40,700 is recommended for this project, contingent upon DNRC approval of the project scope of work and budget.

PROJECT NO. 15

APPLICANT NAME: BUTTE-SILVER BOW LOCAL GOVERNMENT

PROJECT/ACTIVITY NAME: Travona Mineyard Preservation and Enhancement

AMOUNT REQUESTED: \$ 170,280

OTHER FUNDING AMOUNTS AND SOURCES:
\$ 51,830 Applicant

TOTAL PROJECT COST: \$ 197,110

RECOMMENDED FUNDING: \$ 145,280

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The historical headframe at the Travona Mineyard (which has played an integral role in the community's past and evolved as a mineral development impact) needs to be restored and preserved due to safety hazards, as a reminder of our history, and as a focal point for the Heritage Park. Without preservation, the headframe will fall into disrepair and eventually have to be removed due to safety reasons. The vegetated areas surrounding the headframe have been restored to a condition of alfalfa and wild grasses. Such vegetation, however, is not compatible with an urban setting and a heritage park concept.

As part of the overall development of the Heritage Park, the headframe of this historical mine will be evaluated, stabilized, and preserved. This activity will be accomplished through an inspection and evaluation of the structure and accessory equipment, through repair and replacement of defective structures and equipment, and, finally, through preservation by preservation priming and repainting of the structures. The mine site area will be landscaped and revegetated with shrubs and trees compatible with an urban heritage park atmosphere and the adjacent neighborhoods.

Butte-Silver Bow will be the organization responsible for carrying out the project. The project is located in the Urban Corridor of Butte-Silver Bow. It is expected that the preservation and revegetation of the Travona Mineyard will take approximately 18 months.

TECHNICAL ASSESSMENT:

The proposed project to stabilize and preserve the Travona headframe, followed by landscaping and revegetation of the mineyard to improve its compatibility with the surrounding urban residential neighborhood, is adequately defined and documented in the application. Past efforts to reclaim this site were accomplished under the Superfund program, resulting in a fenced mineyard and revegetation with wild grasses and alfalfa.

Developing this area will provide a focal point or "gateway" for the planned Mining and Smelting Heritage Park, creating a usable area for Butte residents and visitors. Project planning for renovation of the Travona Mineyard was coordinated through the regional historic preservation plan developed by local, state, and federal agencies.

The urgency for this proposal is not well documented in the grant application. While the headframe will continue to deteriorate without remedial action, its current state of disrepair is not described. It is also not clear whether the existing vegetative cover meets Superfund requirements. Some erosion may be occurring near the perimeter of the mineyard. If

erosion of the soil cap is occurring, it should be addressed under Superfund operation and maintenance activity, rather than this grant.

Required building and electrical permits for this project would be obtained from the Butte-Silver Bow Building Department. If laboratory analysis determines that asbestos-containing material is present on-site, Butte-Silver Bow would need to comply with federal requirements for disposal.

FINANCIAL ASSESSMENT:

Contracted services that would be funded under this grant are adequately detailed and reasonable. These services include engineering consultation, \$9,500; construction services, \$120,300; landscaping services, \$25,000; and a 10 percent contingency, \$15,480; for a total of \$170,280. Butte-Silver Bow would contribute in-kind services of salaries and benefits for project coordination and public works personnel, supplies, communications, travel, rent and utilities, and miscellaneous indirect costs for a total of \$51,830. Adequate funds have been requested to complete the proposed project. Estimated project costs could rise if the integrity of the soil cap were disturbed during landscaping activities, such as installation of an irrigation system or trees. Any contaminated subsoil excavated would have to be removed to a designated community repository.

It is likely that benefits would exceed costs for the proposed project, although economic benefits are indirect and would result from economic development in the surrounding urban area. Public benefits are also derived from the restoration and preservation of a valued community symbol.

ENVIRONMENTAL EVALUATION:

Adverse environmental impacts would occur during the short construction phase of this project and would be limited to noise, dust, and increased construction activity and traffic in an urban setting. Impacts could be mitigated by limiting construction activity to specified daytime hours and designating an access route for construction traffic to and from the site.

A long-term benefit would be the removal of a possible source of asbestos and other safety hazards at the mineyard.

PUBLIC BENEFITS ASSESSMENT:

Public benefits that would result from the proposed project include the opportunity for Butte residents and other Montanans to explore their historical and cultural mining heritage in a restored historical mineyard. Indirect economic benefits would result as out-of-state visitors explore Butte's Heritage Park. Restoration of the headframe would help protect the public health, safety, and welfare through the elimination of a possible asbestos source and other safety hazards at this mineyard. Lastly, mineyard restoration would enable Butte residents to move beyond completed Superfund restoration work toward an improved quality of life that recognizes the value of these symbols of Butte's mining heritage.

RECOMMENDATION:

A grant of \$145,280 is recommended for this project to address headframe stabilization and preservation, contingent upon DNRC approval of the project scope of work and budget. The grant and scope of work would not include the \$25,000 budgeted for landscaping compatible with an urban heritage park.

PROJECT NO. 16

APPLICANT NAME: YELLOWSTONE CONSERVATION DISTRICT

PROJECT/ACTIVITY NAME: Watershed Planning in Montana Integrating Geospatial Information

AMOUNT REQUESTED: \$ 300,000

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 5,674	Applicant
\$ 72,146	Federal agencies
\$ 20,180	State agencies
\$ 2,000	Yellowstone County

TOTAL PROJECT COST: \$ 200,000

RECOMMENDED FUNDING: \$ 100,000

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

A geospatial information system (GIS) is a technical scientific tool used to collect, monitor, and assess complex databases. It is also a nontechnical information resource, much like a public library. GIS is a means of making issues clear and understandable through the development of computer-generated maps that display the relationship between spatial and tabular data.

Geospatial and coordinated natural resource planning committees and task forces created by the Montana Legislature and federal, state, and local governments have all identified the need for interagency collaboration in the development and use of GIS technology for land use planning in Montana.

An identified obstacle to implementing and strategically planning for the growth of GIS in Montana involves the need to establish a statewide GIS framework--including data sharing, data coordination, data access, data collection, and data management.

The Watershed Planning in Montana Integrating Geospatial Information Project sponsored by the Yellowstone Conservation District is designed to address these and other GIS-related issues. The conservation district will field-test a geospatial planning prototype in a watershed area in the greater Yellowstone region.

The geospatial prototype was created by a team of federal and state land planning agencies, lead geospatial researchers from Montana's universities, city and county GIS/planners, and private citizens and planners involved in local watershed planning.

Implementation of the prototype will establish Montana's first comprehensive geospatial-based watershed planning effort that connects environmental, social, and economic data and makes them accessible to local decision makers through a standardized GIS framework. After field testing, the model will be revised to reflect actual field experience and demonstrated to other planning groups in Montana.

TECHNICAL ASSESSMENT:

The project is a collaborative effort of the Yellowstone Conservation District (YCD); U. S. Department of Agriculture--Natural Resource Conservation Service (NRCS); Center for the Rocky Mountain West; University of Montana, Missoula; Spatial Analysis Lab, Division of Biological Studies, University of Montana, Missoula; Natural Resource Information System, Montana State Library, Helena; Bureau of Land Management; U.S. Forest Service; Bureau of Indian Affairs; Crow Tribal Office; Montana State University, Bozeman; Geographic Information and Analysis Center; Department of Plants and Soils, Montana State University, Bozeman; Yellowstone Center for Applied Economic Research, Billings; Butte-Silver Bow Planning Department, Butte; Yellowstone County Data Processing Department, Billings; and Montana Bureau of Mines and Geology, Butte.

Further included is a technical and advisory team comprised of members from the Montana Interagency Coordinating Group, the Montana Interagency GIS Steering Committee, the Montana Interagency GIS Technical Working Group, and the Information Technology Advisory Council, GIS Task Force authorized by the Montana Legislature.

All of these groups have identified the need for consensus and collaboration between state, federal, and local interests in order to establish and implement a statewide GIS framework.

The Montana Interagency Coordinating Group, which is comprised of federal, state, and local planning entities, has identified the need for government agencies to share professional and technical staff. They state that only through cooperation and participation by all private, state, and federal landowners and affected interests will sustainable watershed and ecosystem-based management strategies be developed, accepted by the general public, and implemented. This same group identified the need to find and fill key data gaps, recognize common data needs, and provide access to data. It also identified the need to acquire, standardize, manage, and share data.

The Information Technology Advisory Council in its 1996 *Report to the Montana Legislature* has identified the need to establish statewide GIS policies related to funding arrangements, legal issues, inter-entity relationships, and standards. It recognized the need to establish a statewide GIS framework that includes support for matters affecting GIS data sharing, data coordination, data access, data collection, and data maintenance.

At present many GIS systems are not compatible. Currently federal, state, and local financial and technical resources are being wasted by duplicate data sources, as well as missing data sets and data sets that cannot be shared. Federal, state, and local funds are being expended to create hundreds of disjointed, incompatible data sets that cannot be linked locally or statewide. As an example, the Spatial Analysis Lab, Division of Biological Studies, University of Montana; the Natural Resources Conservation Service; the U.S. Forest Service; and the Bureau of Land Management are all presently creating land cover maps for all or parts of Montana.

The Watershed Planning in Montana Integrating Geospatial Information Project is designed to begin the process of addressing these needs and others related to watershed planning and the use of geospatial information systems. By implementing the geospatial prototype model being defined in the *Geospatial Systems Reference Handbook*, with oversight by the multi-agency technical team that is creating it, Montana will for the first time have the needed GIS framework in place. Watershed planning and other local planning efforts will begin to be conducted through the cooperative efforts required to focus limited public and private resources.

By December 1996, through use of non-RDGP funds, the applicant will lead an effort to develop a *Geospatial Systems Reference Handbook* which defines a prototype geospatial planning model that will identify the technical criteria required to develop and implement geospatially referenced watershed plans capable of linking natural resource data to an existing, regional economic development, GIS-based database.

The handbook will guide actual demonstration of the prototype model at a yet-to-be designated pilot watershed. The actual number of Montanans, miles of river, number of acres, and amount of water conserved and directly benefited by the project will depend on the location and size of the pilot watershed area. However, by implementing and field testing the prototype in a pilot watershed, the project will become a model that can be used across Montana. This should ultimately increase the effectiveness of natural resource planning efforts in Montana. By combining environmental, economic, and social data into watershed planning through a geospatial format, local decision makers will for the first time have all of the relevant data in a readily accessible, standardized format.

Existing multi-agency technical and advisory teams will provide oversight to the project. They will interact with the local watershed planning committee to evaluate all phases of the project and revise the *Geospatial Systems Reference Handbook* based on actual field experience.

FINANCIAL ASSESSMENT:

The applicant has also applied for funding under the Renewable Resource Grant and Loan (RRGL) Program.

The following table compares costs to be paid by the proposed Reclamation and Development Grant (RDG) with those included in the RRGL application.

		<u>RDG Proposal</u>	<u>RRGL Proposal</u>
Project administration	Grant	\$ 15,800	\$ 9,850
	Match	8,600	7,674
Administrative support	Grant	5,000	1,250
	Match	3,500	3,500
Professional and technical costs Watershed planning field staff	Grant	0	0
	Match	30,000	30,000
Geospatial technology staff	Grant	0	0
	Match	23,000	23,000
GIS specialists for digitizing	Grant	106,200	20,000
	Match	0	0
Consultant for GIS project oversight	Grant	15,000	5,000
	Match	0	0
Travel	Grant	15,000	3,750
	Match	13,000	13,926
Training/workshops	Grant	17,000	5,650
	Match	3,000	3,000
Communications	Grant	6,000	2,000
	Match	7,400	7,400

Printing/publications	Grant	10,000	2,500
	Match	4,500	4,500
Supplies	Grant	20,000	0
	Match	7,000	7,000
Equipment	Grant	90,000	50,000
	Match	<u>0</u>	<u>0</u>
TOTAL GRANT		\$300,000	\$100,000
TOTAL MATCH		\$100,000	\$100,000

In general, the RDGP budget appears to be targeted at totaling \$300,000 rather than at satisfying project needs. At this stage of the project, reduced funding would be more appropriate and cost-effective.

ENVIRONMENTAL EVALUATION:

It is unlikely that this project would have any substantial direct impacts to the environment. Indirectly, it may lead to better decisions on permits, which could benefit the environment or lead to better watershed protection plans.

PUBLIC BENEFITS ASSESSMENT:

The main public benefit that might result from this project is knowledge regarding how a geographic information system might assist watershed planning. Watershed plans might be developed for an undetermined number of drainages.

RECOMMENDATIONS:

A grant of up to \$100,000 is recommended for this project, contingent upon DNRC approval of the project scope of work and budget. This should be sufficient to allow three prototype planning efforts. At least one watershed plan should be conducted in Yellowstone County in a drainage affected by previous mineral development activity.

No project funds should be released until Yellowstone Conservation District provides a clear and concise description of specific goals and objectives of each watershed plan, describes specifically how GIS technology would be used to meet these goals and objectives, identifies which coverages are needed and why they are needed to meet specific goals and objectives, describes alternative methods to obtain and analyze information for inclusion in the plan, and describes cost differences between conventional methods and GIS-assisted methods.

**THE FOLLOWING PROJECTS ARE NOT RECOMMENDED FOR FUNDING. THE LIST IS
ALPHABETIZED BY THE NAME OF THE APPLICANT.**

For projects that are not recommended for funding, "TOTAL PROJECT COST" is the sum of the "AMOUNT REQUESTED" and the "OTHER FUNDING AMOUNTS AND SOURCES."

APPLICANT NAME: BUTTE-SILVER BOW LOCAL GOVERNMENT

PROJECT/ACTIVITY NAME: Butte Mine Subsidence Reclamation Project

AMOUNT REQUESTED: \$ 300,000

OTHER FUNDING AMOUNTS AND SOURCES:
\$ 65,237 Applicant

TOTAL PROJECT COST: \$ 365,237

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Historic mining in Butte has created chronic mine subsidence problems that pose serious safety hazards to local residents. Mine openings are likely to occur anywhere north of Front Street, throughout the Uptown District, in the West Side, and north into Centerville and Walkerville. There are more than 4,000 mining claims in the Butte district and 3,500 miles of underground workings. Each of these claims is likely to have at least one discovery shaft, even if no significant mining was done on the claim. There may be more than 1,000 shafts, prospect pits, trenches, and other subsurface voids within residential areas on Butte Hill.

This proposal has been developed to allow Butte-Silver Bow County to respond immediately to known mine subsidence hazards that would otherwise remain hazardous for a year or longer, or not be addressed at all. The county would enlist the services of professionals to examine reported openings and take appropriate action (i.e., capping, backfilling, fencing, posting signs, or combinations of these measures). Those openings in need of more extensive reclamation would be addressed by the State of Montana's Abandoned Mine Reclamation Bureau (AMRB) using federal funding.

To date, AMRB has done significant work in reclaiming many open shafts in Butte, particularly in the West Butte area. However, as of May 1996, more than 40 holes were open on Butte Hill, many for more than one year. Under existing rules and regulations, AMRB may not have the jurisdiction or the resources to take action. Consequently, many open holes have posed and will continue to pose safety hazards to Butte residents, particularly children. The remedial action made possible with funds provided by this grant will help the community respond effectively and eliminate potentially disastrous consequences.

TECHNICAL ASSESSMENT:

The application describes essentially three alternatives to address the problem of these hazardous mine openings.

1. Butte-Silver Bow can pursue legal action against the responsible party (in most cases, the mineral owner).
2. Butte-Silver Bow can work with AMRB to address these closures, using Office of Surface Mining (OSM) and AMRB funds.
3. Butte-Silver Bow can use RDGP funds to close these mine openings and place a construction lien on the property in hopes that, upon the sale of the property, some or all of the RDGP costs are recovered.

Option 1. While perhaps not politically palatable, one potential solution is Butte-Silver Bow enforcement action against the mineral owners or the occupant of the property where the hazard exists. To RDGP's knowledge, no legal actions have been brought against these owners or occupants whereby the responsible party, and not the State, would be required to close the openings. Parties who create or maintain a hazard - in this case, abandoned mine openings - are required under Section 45-8-113, MCA to take necessary action abating the hazard at their expense. Fines and jail terms could result from noncompliance. Had the applicant initiated legal action that proved unsuccessful, or, in the alternative, had the applicant demonstrated in the application that no viable, responsible parties exist that are liable for the closures, RDGP would be in a much better position to accommodate the funding request.

Option 2. Butte-Silver Bow considers funding this reclamation through the Office of Surface Mining and AMRB unacceptable because of the delays experienced (up to a year) in securing necessary approval and funding. It argues that a means to address problems immediately is needed because of public safety concerns. It is important to note that AMRB funds have been used successfully to close several mine openings.

Option 3. While workable, this option disregards the fact that most of the hazardous openings are located on land owned by New Butte Mining, Montana Mining Properties, Inc., or Butte-Silver Bow itself. AMRB has declined to approve and fund these openings because of the existence of a responsible party. RDGP is in a similar, if not the same, position of not being able to fund cleanup if there are apparently viable, responsible parties. The applicant has presented no evidence to indicate that there is not a viable, responsible party liable for the closure of these openings, which discourages use of RDGP funds at this point. Another problem is that, on many openings approved by OSM/AMRB for closure, the landowner has denied entry to these properties.

The project definitely has merit, but, by the same token, it would set a bad precedent for RDGP to abate these hazards before an obvious alternative (legal action) has been pursued. Another option not addressed by the applicant is potential imposition of an emergency two-mill levy to abate these hazards.

FINANCIAL ASSESSMENT:

The applicant proposes to plug 25 open holes using contracted engineering and construction services at a total cost of \$285,500. The budget uses an average cost of \$11,420 per hole (engineering of \$1,300 and construction of \$10,120). AMRB has contracted for earlier Butte-area hole closures at an average cost of \$1,000 per hole, with additional engineering costs averaging \$1,300 per hole, for a total average cost of \$2,300 per hole. AMRB's costs are clearly representative of the costs that Butte-Silver Bow would incur under the grant.

If RDGP funds were received and used for hole closure, Butte-Silver Bow County would attach liens to the current property owners (the liable party) on whose property the hole is located. Under the proposed grant, these reclamation liens would be

expected to bring in some reimbursement for county expenditures when the lien is paid, generally upon sale of the property. These lien reimbursements would provide a future funding source for county hole closure efforts following the grant's two-year funding period.

ENVIRONMENTAL EVALUATION:

Without knowing the location and specifics of which mine subsidence holes are to be filled, it is impossible to state categorically that there would be no environmental impacts from the proposed activities. AMRB has adopted a series of necessary environmental procedures that ensure that potential adverse environmental effects are considered in mine hole capping. The applicant should consult with AMRB and develop an environmental evaluation process that provides for considering the impacts of hole closure activities on a site-specific basis.

PUBLIC BENEFITS ASSESSMENT:

Fixing mine subsidence problems in an urban area would protect the public from these hazards and would minimize property damage. According to the applicant, over 15,000 people live within one-quarter mile of the mine openings area. Most holes are attractive nuisances and can be expected to create significant safety hazards.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME: DEER LODGE VALLEY CONSERVATION DISTRICT

PROJECT/ACTIVITY NAME: Development of Acid/Heavy Metal Tolerant Cultivars

AMOUNT REQUESTED: \$ 100,000

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 2,500	Applicant
\$ 43,000	U.S. Department of Agriculture, Natural Resource Conservation Service, Plant Materials Center
\$ 5,000	Soil and Water Conservation Districts of Montana, Inc.

TOTAL PROJECT COST: \$ 150,500

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The unavailability of plants that can withstand the severity of acid- and/or heavy-metal-contaminated soils or wastes has motivated the origin of a project to develop new cultivars that demonstrate an inherent tolerance to these contaminated conditions. The Development of Acid-Tolerant Cultivars is a project previously funded by a grant from the Montana Department of Natural Resources and Conservation. This grant application is being completed in the hope of securing further funding for this most important project. Its goal is to develop plant cultivars that have the ability to grow on acidic and/or heavy-metal-contaminated sites. Once potentially tolerant plants have been collected, they are tested in the field. Two test

sites in Anaconda, Montana, and one test site in East Helena, Montana, were constructed for the testing of candidate species. Collections passing the field evaluation phase of the study are then put into seed increase at the Bridger Plant Materials Center. Once a seed source has been established and the progeny tested for performance, further testing will be performed in preparation for its release as a new cultivar. Released cultivars will then be made available to seed producers as foundation seed stock (or some other level of seed classification). The seed producer will then be able to market this valuable new cultivar to the general public.

A total of 89 seed and plant collections were made throughout the summer and fall of 1995. Seed germination and dormancy studies have also been completed and have provided some very useful data. These collections and the 1996 summer collections will require two more years of project time for planting and evaluation.

TECHNICAL ASSESSMENT:

While the proposed project would not directly result in any cleanup, it would be useful and would provide further benefits for the investment already made. During the next 15 to 20 years, large reclamation projects in Montana, such as the Clark Fork Superfund Project and numerous mine reclamation projects, potentially will require large amounts of seed from acid/metal - tolerant plants. Despite various research activities, no widespread seed collection and evaluation are under way for this region. Due to the long time frames necessary to develop adequate seed supplies, this is still a very timely project. However, continued funding by RDGP is inappropriate.

Start-up funding in the amount of \$120,000 for Phase I of this project was approved by the 1993 legislature. The Natural Resource Conservation Service (NRCS) pledged at that time that it would fund subsequent phases at a level sufficient to sustain the project until completion. Because of this commitment by NRCS, no funding is recommended.

FINANCIAL ASSESSMENT:

The RDGP funds requested include:

Salaries, and wages	\$ 69,000
Employee benefits	\$ 17,250
Contracted services	\$ 9,750
Supplies and materials	\$ 500
Communications	\$ 500
Travel	<u>\$ 3,000</u>
TOTAL	\$ 100,000

The budget is reasonable for a salaried, full-time position over a term of two years. The need for a full-time employee, however, is not well documented.

ENVIRONMENTAL EVALUATION:

The project would be unlikely to have any substantial direct adverse impacts. There might be some minor impacts to soil and vegetation resources at existing sites during field activities. The project could have substantial long-term benefits if acid/metal-tolerant native plant species are developed and used in reclamation. A reliable supply of quality seed would aid reclamation attempts.

PUBLIC BENEFITS ASSESSMENT:

If native indigenous cultivars could be made available for use on drastically disturbed areas, then reclamation attempts could be more successful in terms of stability and permanence. Successful revegetation of acid/metal-affected land would benefit Montana by increasing vegetative production, which should reduce runoff from reclaimed sites. This establishment also should improve recreational opportunities and visual quality. There may be direct economic benefit to commercial seed growers marketing the cultivars released from this project.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME LEWIS AND CLARK COUNTY WATER QUALITY PROTECTION DISTRICT

PROJECT/ACTIVITY NAME: Tenmile Mine Site Reclamation Project, Phase II

AMOUNT REQUESTED: \$ 268,121

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 18,459	Applicant
\$ 10,985	Montana Department of Environmental Quality - Abandoned Mine Reclamation Bureau

TOTAL PROJECT COST: \$ 297,565

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Heavy rainfall and snowmelt during the spring and summer of 1993 caused water to back up within the Tenmile Mine adit. Water pressure within the adit forced a plug "blowout," causing several hundred cubic yards of mine tailings, waste rock, mud, and debris to slide down the steep hillside, over a large section of Montana Department of Environmental Quality (DEQ) reclaimed land, and into Tenmile Creek. The Tenmile Water Treatment Plant stream intakes are located approximately 1 mile downstream of the slide area.

In addition to creating turbidity during periods of high runoff, the slide materials contain toxic and heavy metals that continue to pollute Tenmile Creek. These pollutants include arsenic, lead, cadmium, and zinc. Acidic leachate from the tailings slide continues to pose an imminent threat to water and aquatic life in the creek.

Project work, financed by the U.S. Forest Service and DNRC/RDGP grant moneys during the summer of 1996, has focused on removal of the mud and rock slide materials from Tenmile Creek and stabilization of the impacted stream bank. However, the remaining portion of the slide and continued acid mine drainage must be addressed. Proposed project work will focus on reducing the adverse impacts to the creek from turbid and metal-laden run-on/runoff or leachate originating at the site of the slide. Adverse impacts will be mitigated by a combination of source reduction and surface reclamation. Portions of the slide materials will be relocated away from the creek, erosion paths will be recontoured and stabilized, sediment traps will be

constructed, and the site will be revegetated. Adit drainage controls will also be implemented to collect and re-route water that would otherwise leach and move heavy metals into Tenmile Creek.

The work plan includes a monitoring and assessment program to evaluate effectiveness of the project and collect needed data on the flow rate and chemical characteristics of the adit drainage water. If successful, this program will serve as a paradigm for other reclamation projects in the Tenmile and other Montana watersheds impacted by abandoned mine sites.

TECHNICAL ASSESSMENT:

The Lewis and Clark County Water Quality Protection District (WQPD) is to be commended for its efforts to improve water quality in the Tenmile Creek watershed. Its efforts led to a 1995 RDGP grant in the amount of \$75,000 to conduct cleanup and reclamation from fall of 1996 to spring 1997.

As part of the current request (Phase II), WQPD has requested funding for preparation of a reclamation work plan and an expanded engineering evaluation and cost analysis (EE/CA) specific to the site. The work plan is routinely used as a guidance document in performing cleanup at sites containing hazardous materials. It analyzes existing data on waste characteristics (solid and aqueous media), develops a set of reclamation goals based on the analysis, and screens various reclamation alternatives potentially capable of meeting the reclamation goals. It provides a mechanism whereby decision makers can evaluate a proposed cleanup not only in terms of effectiveness and implementability, but also in terms of relative cost. The reclamation work plan, or equivalent, is used by RDGP to assist in evaluating a projects feasibility. An expanded engineering evaluation carries the process one step further and provides a detailed analysis of reclamation alternatives identified during preliminary screening. Its purpose is to select a preferred reclamation alternative in terms of these factors:

1. Overall protection of human health and the environment
2. Compliance with applicable laws and environmental standards
3. Long-term effectiveness and permanence of the remedy
4. Reduction of toxicity, mobility, and volume of contaminants
5. Short-term effectiveness
6. Implementability
7. Cost

It should be noted that a number of agencies, in particular DEQ's Abandoned Mine Reclamation Bureau (AMRB), have experienced frustration in finding suitable solutions to the abandoned mine problems in the Tenmile drainage. Projects implemented have met with limited success principally because of slope steepness, proximity of waste materials to the creek, and absence of a suitable disposal area for waste materials. Until these problems are addressed and a cost-effective reclamation strategy is developed and designed, major investment in this project is a concern to reviewers. Additionally, a number of sites located in the Rimini Mining District rate higher cleanup priority by state and federal agencies than the Tenmile mine. RDGP at present is faced with a difficult task in determining the level of financial commitment and participation that is appropriate.

At this stage it would be prudent to wait for the results of the DEQ/USFS/EPA cleanup efforts in the Tenmile watershed before designing and implementing the current request. This would allow a coordinated and multi-disciplinary cleanup approach that the complexities of reclamation in the Tenmile drainage require.

There is some indication that AMRB will begin assessment of the site in the foreseeable future (one to two years). If so, AMRB is likely to fund the project through the EE/CA and design stage and possibly construction. In this scenario, RDGP funds could be used as supplemental funding for construction purposes only. These funds would be requested in spring 1998, during the next grant cycle.

FINANCIAL ASSESSMENT:

Without preliminary estimates of construction costs based on unit price and quantity determinations, budget feasibility cannot be evaluated. Lump sum figures were given for the various design and construction work items, with no explanation as to how they were developed. This information should have been included in the application. Further, more detailed investigation of site conditions and waste characteristics may indicate a completely different reclamation alternative than the containment alternative proposed, in which instance the costs may be significantly lower or higher than those submitted. The budget calls for AMRB to receive \$3,500 in RDGP funds to manage the project, financially and technically. This has not been agreed to by AMRB. Additionally, the nature and amount of in-kind contributions listed as coming from AMRB cannot be confirmed.

What appears to be a worthwhile project unfortunately has too many financial, administrative, and technical unknowns to be considered and resolved before RDGP expenditures are recommended.

ENVIRONMENTAL EVALUATION:

Adverse short-term impacts are expected to occur during construction activities. Release of sediment and/or hazardous substances into the stream channel during construction activities will reduce short-term water quality in Tenmile Creek. Violation of water quality criteria could be minimized by a combination of construction timing, best management practices, sediment control measures, and follow-up monitoring of water quality. The project is designed to contain the source of pollution, thereby preventing continued pollution over the long term. Design of this project must include methods to mitigate effects from increased erosion during precipitation events until the site and vegetation become stabilized.

PUBLIC BENEFITS ASSESSMENT:

Removal of sources of turbidity, arsenic, and heavy metal contamination to Tenmile Creek would help conserve and protect the stream. A well designed and coordinated project would provide long-term benefits by improving stream water quality in the Tenmile watershed.

Due to turbidity and metal-laden contamination, treatment of Tenmile Creek water is costly, and introduction of these materials to the Tenmile water treatment plant has the potential of damaging the facility. Remediation of the mine site that specifically addresses these contaminants will help prevent such damage. Montanans would benefit directly and indirectly from the Tenmile mine site reclamation project by a reduction in risk to public health, improvement of water quality of a Montana stream, and enhancement of a public recreational resource, assuming the project is carefully designed and constructed.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME: MISSOULA, CITY OF

PROJECT/ACTIVITY NAME: Glacial Lake Missoula: An Untapped Natural Resource Opportunity

AMOUNT REQUESTED: \$ 166,089

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 5,000	Applicant
\$ 54,000	U.S. Forest Service
\$ 70,835	Montana Bureau of Mines and Geology (MBMG)

TOTAL PROJECT COST: \$ 295,924

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Glacial Lake Missoula was an ice-age lake that formed several times during the glacial history of western Montana. It last existed about 12,700 years ago. Its maximum depth was approximately 2,100 feet, at which time it contained approximately 500 cubic miles of water. In Missoula, its depth reached 950 feet, based on the wave-cut shorelines on Mount Sentinel and Mount Jumbo. Glacial Lake Missoula covered about 3,000 square miles of western Montana. Beginning at an ice dam in northern Idaho a few miles west of Heron, Montana, it reached eastward to the Mission Range, southward to the southern end of the Bitterroot Valley, and southeastward as far as Garrison, Montana.

This project is a crucial state need because it will enhance Montana's economy through the interpretive development of one of the state's lesser known natural resources - the remaining evidence of Glacial Lake Missoula. In addition, it will develop, promote, protect, and further Montana's total environment and ensure the welfare and public resources of Montana citizens and communities.

The goal of this project is to tell the story of Glacial Lake Missoula, including its effect on our landscape, settlement history, water resources, and economics. To attain this goal, this project will produce three tangible products. A well-illustrated travel guidebook will be generated emphasizing Glacial Lake Missoula and other key historical features that will be enjoyed by Montana citizens and millions of nonresident visitors. A brochure will also be developed and distributed in key locations. The brochure will give an introduction to Glacial Lake Missoula and its role in the great floods of the Pacific Northwest. The third product is a catalogue of sites that best tell the Glacial Lake Missoula story. The catalogue will include a pictorial and geologic description that discusses the significance of each site. This catalogue can be used to identify sites for future interpretive development such as roadside stops.

By telling the story of Glacial Lake Missoula, we can help preserve part of our heritage. This project will also promote economic growth by detaining visitors in Montana through the use of the travel guidebook. If these visitors each spend just one more dollar, Montana's citizens can benefit from an increase in revenue of potentially \$4.9 million.

TECHNICAL ASSESSMENT:

Project goals and objectives are clearly stated and commendable - to tell the story of Glacial Lake Missoula to the general public through a travel guidebook, brochure, and pictorial and geologic catalogue of sites. Reviewers noted that geologists have extensively studied and documented Glacial Lake Missoula and the Bretz Floods for decades and incorporated material and information into introductory geomorphology curriculums at the University of Montana; therefore, the need for additional

data compilation and field verification is questionable. With only two of many known sites discussed in the application, it is not clear whether identification of any previously unknown sites would be accomplished.

Although the proposal documents the use of a Global Positioning System (GPS) and a laptop computer for networking and data management, it is not clear to what extent a database would be created that would be compatible with other existing agency databases. Management of glacial lake resources on public lands would likely benefit from incorporation of information compiled for this project into other existing databases. Also, creation of a database that could be used by libraries and schools in the region is an unexplored outreach tool in the current proposal.

Potential destruction of some glacial lake sites is mentioned as a justification for grant need. Documentation needs to be provided describing the urgency for some type of preservation action for unprotected features. The extent to which some land uses may be compatible with retention of glacial lake features is not discussed, nor is the potential impact resulting from possible obliteration of features. To help document project urgency, the level or rate of development of private lands needs to be assessed, as well as the likelihood of threat to this prehistoric resource from incompatible uses or planned development. Where sites are in public management, managing agencies should be aware of their existence and value and incorporate site retention or preservation into their management plans where appropriate. The project goals involving production of a travel guidebook and brochure do little to protect this resource, while a catalogue of sites that compiles known sites and discusses their significance or identifies previously unknown sites may further their effective management.

FINANCIAL ASSESSMENT:

The largest item in the project budget is salaries and benefits (\$182,926), which make up 62 percent of the total budget of \$295,924. RDGP grant moneys would fund \$113,338 of salaries and benefits, with funding from MBMG and USFS totaling \$69,588 in salaries and benefits. Other budget items funded by RDGP funds are contracted services, \$18,000; supplies and materials, \$4,000; communications, \$200; travel, \$18,757; rent and utilities, \$6,794; and project administration costs, \$5,000; for a total of \$166,089.

For the most part, salaries would fund the technical compilation of sites and any necessary field verification. Grant administration would be handled by the Missoula Area Economic Development Corporation, with salaries funded by MBMG (as a miscellaneous budget item). It is not clear from the proposed budget why RDGP funds should be used to partially fund salaries and benefits for five public employees at MBMG and USFS over the two-year duration of the project. Other questionable budget items include no provision for (a) distribution costs for the travel guide and brochure, (b) administration of sales, and (c) monitoring of project success. Estimated costs for aircraft photography (20 hours at \$185/hour = \$3,700) and handling and developing of film may be low.

Additional outside funding sources for marketing a guidebook and brochure should be explored through one of the existing state-funded travel regions. Another funding option could include the sale of advertising space within a travel guide.

The extent to which project efforts overlap those of the Ice Age Task Force is uncertain. Project efforts may be a continuation of past work by the task force. Also, the National Park Service, Bureau of Land Management, and Washington State University have produced a video about the ice age floods and Glacial Lake Missoula. In Washington, interpretation of glacial flooding features have been added to a number of federal and state park facilities in past years.

ENVIRONMENTAL EVALUATION:

Negligible direct impacts to the physical and social environment would result from production of a travel guide, brochure, and pictorial catalogue. Long-term benefits would result if project information leads to the preservation of key natural features (see the "Public Benefits Assessment" for other beneficial effects.)

Adverse indirect impacts at some glacial lake sites could occur following project completion. Identification of travel routes and trails in close proximity to glacial lake sites and their incorporation into a travel guidebook could lead to increased visitor use at inappropriate locations. The grant application does not address how potential increased use would be managed. With increasing use, public land managing agencies may need to plan for signage, parking, garbage collection, and restroom facilities at the more popular sites. Where glacial lake sites are on private land, unwanted or incompatible uses may occur. The extent and magnitude of these effects could range from minor to major, depending on future increases in visitor use and its management.

PUBLIC BENEFITS ASSESSMENT:

Public benefit would result from the availability of information to the lay public about Glacial Lake Missoula. The grant application and reviewers both commented on the availability of the information to professionals, but its lack of availability to the general public. This proposal pulls together a unique blend of professions to create a product the public can use. The extent to which project information would result in better understanding of how the lake affects our actions today, or would be utilized by individuals for improved site planning and development, is questionable.

Any tourism development and/or attraction will appeal to certain market segments. Economic benefits predicted for this proposal are unlikely to occur, because visitors to the Missoula area will not each spend one more dollar if glacial lake sites are identified in a guidebook and brochure. A detailed market study would be needed to establish a reliable estimate of this project's economic benefit. Marketing and promotion of sites should follow their development, not precede it. This development could include interpretive signage, marked access roads and pullouts, guided or recorded tours, destination interpretative centers, and provision of other visitor services.

The untapped public benefit that could be realized from this project is the inventory and synthesis of planning information that could guide how land use planners, water resource planners, landscape ecologists, and others view and manage important natural features in future years.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME: MONTANA BOARD OF OIL AND GAS CONSERVATION

PROJECT/ACTIVITY NAME: 1996 "C" Orphaned Well Plug and Abandonment and Site Restoration

AMOUNT REQUESTED: \$ 300,000

OTHER FUNDING AMOUNTS AND SOURCES:
\$ 10,000 Applicant

TOTAL PROJECT COST: \$ 310,000

RECOMMENDED FUNDING: \$ 0

Please refer to the project writeup on page 22 of this report.

APPLICANT NAME: MONTANA BUREAU OF MINES AND GEOLOGY

PROJECT/ACTIVITY NAME: Oil and Gas Potential along the Fromberg Fault Zone, South-Central Montana

AMOUNT REQUESTED: \$ 95,139

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 55,121 Applicant

TOTAL PROJECT COST: \$ 150,260

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The Fromberg fault zone extends from near Red Lodge to just south of Billings. It appears to be part of a northeast-trending, basement-controlled structure that traverses the northern Bighorn Basin and forms the northern edge of the Pryor-Bighorn uplift. The zone has been long recognized, but it has never been completely described or fully understood. It appears to have exerted fundamental control on structural and stratigraphic features in the area. Structures associated with the zone trap oil at Mosser Dome field, located southeast of Billings. Proposed research will focus on unresolved structural problems and the complete understanding of the geologic controls for Mosser Dome field. The Fromberg fault zone may be part of a regionally important basement zone of weakness that may extend into the Williston Basin. It probably exerts similar geologic controls in that area. The zone, therefore, also may have important associations with oil and gas accumulations along its northeast extension.

The intended main objectives of this project are a comprehensive interpretation of the Fromberg fault zone and its northeast extension and a description of its relation to oil and gas accumulations. The main goal of the project is for its results to be applied by the oil and gas industry to the exploration for and the responsible development of new oil and gas reserves, thereby stimulating the oil and gas exploration industry in Montana.

The Montana Bureau of Mines and Geology is responsible for carrying out this project.

The study will encompass the region of the eastern Beartooth Mountains northeastward into the Williston Basin, along the trend of the Fromberg fault zone.

The project is designed to be completed in two years, beginning July 1998.

TECHNICAL ASSESSMENT:

The objectives of the study are:

1. To identify as completely as possible the geometry and timing of all the faults and other structural features along the Fromberg fault zone.
2. To analyze producing oil and gas fields along the fault zone to define completely the geologic controls on the accumulation, including the nature of the trap, the lithology and geometry of the reservoir rocks, and the timing of migration.

3. To determine what depositional controls have been exerted on the entire sedimentary section by structural movements along the Fromberg fault zone. This work will provide information regarding other potentially productive reservoir rocks associated with the Fromberg fault zone.
4. To confirm reported controls on deposition and gas accumulations to the northeast into the Williston basin.
5. To synthesize and compile all data generated by the project to develop a comprehensive description of oil and gas potential along the Fromberg fault zone and its northeast extension that will provide exploration leads for the oil and gas exploration industry.

The stated purpose of this study is to stimulate the oil and gas exploration industry in Montana by transferring the study results and recommendations to that industry. These "leads," the applicant feels, may result in leasing, exploration, and eventual production activity by oil and gas interests.

The urgency of this request rates low in comparison with competing RDGP grant requests primarily due to its speculative aspects. Whether this study will directly lead to increased oil and gas activity is unknown, but exploration/development is much more likely to be driven by oil market prices than this proposed study's findings. This is not to imply that the proposed research is without merit; it may be useful to small, independent companies lacking the capital to undertake the investigation themselves. Its value to major companies is probably minimal as they typically tend to generate their own data exclusive of outside sources. Whether this study duplicates industry efforts is also unknown. Proprietary information gathered by private companies may well include much of the data collection, mapping, and interpretation proposed here.

FINANCIAL ASSESSMENT:

Wages for the principal researcher, computer analyst, and graduate student are appropriate for the work being conducted.

Equipment purchased would include a slide printer for outputting satellite imagery and other data from a computer for public presentations, software to process satellite imagery, and satellite imagery. Estimated costs of these items are reasonable, but bids should be received for the slide printer and software. The study area is close to Billings, where the principal researcher is stationed. Consequently, the costs for travel have been minimized. Other costs for the project are reasonable.

The RDGP budget request includes:

Salaries and fringe benefits (geologist, computer specialist, student assistant)	\$ 70,057
Contracted services (film developing)	\$ 500
Supplies and materials	\$ 2,150
Communications	\$ 250
Travel	\$ 4,299
Rent and utilities	\$ 688
Equipment (slide printer, software, data) software, data)	\$ 12,095
Miscellaneous	\$ 5,000
TOTAL	\$ 95,139

The applicant would contribute \$40,766 for indirect costs (calculated at 50 percent of total salaries and benefits); \$11,475 for salaries and benefits for the principal investigator; and \$2,880 for rent and utilities.

ENVIRONMENTAL EVALUATION:

This project would have only minor direct impacts to soil and vegetative resources resulting from the use of a vehicle to move across rangeland. Indirect impacts are possible if the study leads to increased oil and gas exploration and development.

PUBLIC BENEFITS ASSESSMENT:

If the oil and gas industry initiates exploration and/or production activities, then Montana's economy would be directly impacted. Jobs, increased tax revenues, and increased flows of supplies, materials, goods, and services would be expected locally and possibly statewide. The likelihood of this happening as the result of this study, however, appears quite low.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME: MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PROJECT ACTIVITY NAME: Nonpoint Source Pollution Control In Montana

AMOUNT REQUESTED: \$ 300,000

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 31,680	Applicant
\$ 30,744	Conservation districts
\$ 99,985	U.S. Natural Resource Conservation Service
\$1,394,800	U.S. Environmental Protection Agency

TOTAL PROJECT COST: \$1,857,209

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Despite Montana's bountiful water resources and national reputation for pristine trout streams, nonpoint source (NPS) pollution is threatening water quality in hundreds of streams and stream segments throughout the state. This proposal is to provide resources to assess, target, and restore these damaged rivers and streams by providing project-by-project technical and educational assistance.

NPS pollution accounts for over 90 percent of the total water pollution in Montana. Twenty-five percent of Montana's perennial streams and 75 percent of its lakes are impaired from NPS pollution. Montana has more miles of polluted streams than any other state in the nation except Oregon (EPA's *1990 National Water Quality Inventory*).

Section 319 of the Federal Water Quality Act (WQA) of 1987 authorized financial assistance to states to help them implement NPS pollution control programs. Following the development of a state NPS Assessment Report and a NPS Management Plan, the Water Quality Bureau of the Department of Health and Environmental Sciences (DHES) became eligible for financial assistance on a 60-percent-federal/ 40-percent-state match basis. (In July 1995, this bureau was

reorganized and placed in the new Montana Department of Environmental Quality [DEQ]). These documents outline strategies for Montana to address NPS problems.

There has been an increasing interest in watershed management in the past several years and a similar increase in the number of requests for assistance to assess NPS pollution in local watersheds. These requests are usually to help plan and implement projects that reduce or eliminate NPS pollution through the use of proper resource management measures or Best Management Practices (BMPs). Montana's NPS Management Plan emphasizes the need for technical and financial assistance to help land users implement BMPs under a nonregulatory program.

The funds requested in this proposal are crucial to the success of an effective NPS program in Montana. These funds will serve as leverage for federal 319 match funds and private contributions obtained by DEQ. Examples of projects that are pending include:

1. Watershed projects - planning and implementation of watershed plans to address priority water quality problems
2. Demonstration projects showing new BMP technology
3. Nonpoint source water body assessments and water quality monitoring of selected waters
4. Watershed planning for total resource management
5. "Capacity building" for conservation districts (CDs) and other local watershed project sponsors

This list is just a representative sample of the water quality project assistance that local groups are requesting. If state match funds are not available, Montana will not be able to obtain federal funding for NPS pollution control. By combining state and federal resources, DEQ will be in a proactive position to help Montana residents solve their NPS water quality problems.

TECHNICAL ASSESSMENT:

The voluntary Nonpoint Source Pollution Control Program for the state of Montana has been funded in part by RDGP since July 1991. The first nonpoint contract was sponsored by DNRC's Conservation Districts Bureau in the 1980s. That grant was for \$262,753 and was completed June 1996. Since then the RDGP contracts have been sponsored by DEQ. A listing of the current RDGP/NPS program grants is as follows:

<u>Project Sponsor</u>	<u>Year</u>	<u>Grant Amount</u>	<u>Balance as of 10/4/96</u>	<u>Completion Date</u>
DEQ	1991	\$ 146,620	\$ 10,859	9/30/1996
DEQ	1993	\$ 300,000	\$ 201,902	6/30/1997
DEQ	1995	\$ 300,000	\$ 300,000	Not yet contracted

Factors beyond the control of the applicant and not evident at the time of application submittal have led to delay in implementing projects to be funded by the 1993 and 1995 RDGP grants. Adequate time is necessary to assemble landowner participation, negotiate landowner agreements, and develop quality assessments of site conditions prior to project construction and implementation. Evaluation of the application and discussions with the Department of Environmental Quality indicate that, because of slower-than-anticipated project implementation rates, the remaining grant balances (totaling \$512,761) will be sufficient to conduct the NPS program effectively until state fiscal year 2000. This time frame coincides with the next RDGP grant cycle (commencing in May 1998), and the applicant is encouraged to resubmit an updated version of its current request at that time.

During the summer of 1996, DNRC conducted an evaluation of the first RDGP grant. The evaluation focused on improvements in water quality, landowner participation, technical assistance, and program administration. Visual improvements were documented at the sites of the three nonpoint projects funded by the grant. Sufficient time has not elapsed to completely measure the success of the efforts, but at one of the sites an increase in the number of macroinvertebrates was documented. The evaluation also determined that, to be most effective, landowner participation needs to be secured up front, before any best management practices are funded. Technical assistance secured through contractual arrangements with the Natural Resource Conservation Service is also needed. Implementation of these measures in conjunction with the hiring of a local coordinator for project management should reduce or eliminate the project delays experienced in connection with the first grant.

FINANCIAL ASSESSMENT:

The RDGP request includes:

Watershed planning and cost share	\$ 169,256
Stream assessment	\$ 40,000
Capacity building	\$ 40,000
CD administrators salaries and benefits	\$ 30,744
Water quality monitoring	\$ 11,000
Aerial photos	<u>\$ 9,000</u>
TOTAL	\$ 300,000

These costs are based on actual expenses incurred under previous RDGP grants and are considered reasonable for the work performed. The 1995 grant (not yet contracted) will reflect similar estimates. The applicant will use other sources of funds and selected RDGP projects approved by the 1997 legislature to meet the federal/state match requirement.

As the applicant states, no efforts have been made to compare the cleanup costs directly to such benefits as reduced municipal treatment costs, or to the value of the increased fishery that resulted from the reduction of pollution. The applicant says that the diverse nature of the problem and number of sources make it too difficult to quantify. However, the applicant should consider such a cost/benefit comparison in at least one project area implemented under the 1993 or 1995 grants. This would be valuable in evaluating the program benefits.

ENVIRONMENTAL EVALUATION:

The beneficial or adverse impacts that would occur are dependent on the specific individual projects funded through the nonpoint source program. If best management practices are applied on a widespread basis, it is expected that there will be a direct reduction of soil erosion and improvement of water quality in the long term. Additional positive impacts would be realized through improved wildlife habitat, decreased water treatment costs, and improved land and water management. Positive environmental impacts from stream assessments, watershed planning, stream monitoring, and capacity building will be indirect.

Short-term water quality, noise, and dust problems could result during construction, e.g., installation of certain practices such as diversion structures and weirs. There is also the potential for impacts to historical/archeological resources if these are not surveyed prior to project construction.

Permits may be required for some of the projects. Conservation district 310 permits would be required for replacement of diversion structures. Permit requirements will depend on the type of practice installed and its location.

PUBLIC BENEFITS ASSESSMENT:

These benefits also depend on the specific projects that are funded. Watershed projects implemented under the program are expected to reduce erosion and sedimentation, minimize property damage, decrease susceptibility of adjacent lands to flooding, and reduce damage to irrigation structures and equipment. Public health, safety, and welfare would be improved, especially with regard to drinking water supplies. Nonpoint source pollution control measures should reduce pathogens in surface water, decrease bioaccumulation of metals and pesticides in tissues of fish and other organisms consumed by humans, and lower the amount of nitrates that can cause infant health problems. Also, eutrophication of water bodies from excessive nutrient discharge would be reduced. Improved water quality is also important to Montana's growing tourism and recreation industries. The actual public benefits from stream assessments, watershed planning, stream monitoring, and capacity building will be less certain.

RECOMMENDATION:

No funding is recommended for this project.

<u>APPLICANT NAME:</u>	MONTANA STATE UNIVERSITY - EXTENSION SERVICE	
<u>PROJECT/ACTIVITY NAME:</u>	Montana Local Government Pollution Prevention Assistance Project	
<u>AMOUNT REQUESTED:</u>	\$ 284,292	
<u>OTHER FUNDING AMOUNTS AND SOURCES:</u>		
	\$ 104,389	Applicant
	\$ 86,000	U.S. Environmental Protection Agency
<u>TOTAL PROJECT COST:</u>	\$ 474,681	
<u>RECOMMENDED FUNDING:</u>	\$ 0	

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Environmental issues affecting the quality and quantity of natural resources are reaching every corner of the state, confronting communities with problems for which there are no easy solutions. Within each local government, opportunities exist to prevent wastes and control negative environmental impacts to communities and their citizens. Common city/county infrastructure facilities where cost-effective pollution prevention opportunities exist include the water utilities department, buildings, street and road maintenance, fleet maintenance, parks and recreation department, fire and police departments, health department, solid waste facilities, and sewage treatment plant.

The goal of this project is to provide all Montana cities and counties with resources and technical assistance to establish and sustain a local government pollution prevention assessment action plan and program. This project will be conducted statewide by the Montana Pollution Prevention Program, which is based in Montana State University-Bozeman, and it will be implemented by the Extension Service's network of offices. The project will be implemented in cooperation with the Montana Association of Counties and the Montana League of Cities and Towns.

The Montana Pollution Prevention Program is a nonregulatory, technical assistance program of the Montana State University Extension Service. The Pollution Prevention Program, through the Extension Service, consists of 53 offices statewide, serving Montana's 56 counties as well as four Indian reservations. Since the creation of the Pollution Prevention Program in 1992, the program has already achieved significant multi-media waste minimization and prevention results. Program highlights include providing direct technical assistance to over 1,500 small businesses (dry cleaners, carbody and repair shops, printers, construction companies, hotel/motel facilities), hosting the nation's first tribal pollution prevention conference, and developing a waste minimization program for Montana schools.

This project is a 24-month effort with follow-up and guidance from the Montana Pollution Prevention Program continuing after the funding cycle.

TECHNICAL ASSESSMENT:

The main goal of this proposal is to provide local government officials with training and informational materials necessary to establish a local government pollution prevention plan. The proposal contains six objectives:

- 1. Create a local pollution prevention task force
- 2. Provide technical assistance to local officials
- 3. Prepare and distribute a pollution prevention guidebook
- 4. Provide training to local governments using workshops and the Montana Electronic Telecommunications Network (METNET)
- 5. Provide a computer conferencing link between MSU and local government offices
- 6. Develop recognition and awards program for local governments

Under a 1995 RDGP grant, the applicant is successfully implementing pollution prevention training and information dissemination activities to small, private businesses. The current request expands on this effort, focusing technical assistance at public entities, i.e., local government officials. While RDGP recognizes the importance of pollution prevention efforts in both the private and public sectors it is not clear how the six listed objectives coordinate with activities planned or being implemented by other key players, i.e., state and federal agencies and private groups, in the pollution prevention field.

The Department of Environmental Quality (DEQ), for instance, provides both funding and technical assistance to local governments covering all areas of pollution prevention and pollution materials including prevention guidebooks, such as the one proposed by the applicant, are available at minimal or no cost from a variety of sources. More specific information on how the proposed project coordinates with existing and planned efforts by DEQ, EPA, and private groups is needed to assess this application thoroughly. It is suggested that the applicant consult with these other key players and partners, help establish common goals and objectives, define respective roles and responsibilities, and develop short- and long-term plans to evaluate pollution prevention programs statewide.

FINANCIAL ASSESSMENT:

The RDGP budget request includes:

Salaries and fringe benefits	\$195,418
Contracted services	\$ 8,870
Supplies and materials	\$ 8,476
Communications	\$ 7,498

Travel	\$ 32,532
Equipment	\$ 2,400
Miscellaneous	<u>\$ 29,098</u>
TOTAL	\$284,292

The cost/benefits of this proposal appear to be marginal. Salaries and fringe benefits (for two specialist positions, a secretary, and a graduate student) are particularly high, given the corresponding work load. A more cost-effective approach would consider use of state and federal personnel for technical assistance, use of informational pollution prevention materials, (including the State of Montana's *Integrated Solid Waste Management Plan*) that are already available for guidance and planning, and use of existing pollution prevention task forces. Significant savings in the proposed budget would be expected if this project were closely coordinated with DEQ, EPA, and the affected local government. Duplication of services would be avoided.

ENVIRONMENTAL EVALUATION:

Because this project would not produce any direct pollution prevention actions, the project would not lead to any direct environmental impacts. Any project effects would be indirect, from information efforts influencing subsequent local government pollution reduction actions. This project would not have any significant environmental impacts.

PUBLIC BENEFITS ASSESSMENT:

Public benefits might result from more pollution prevention information being available to local government officials. However, because this proposal duplicates other efforts, no significant benefits appear to be associated with this project.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME: MONTANA STATE UNIVERSITY-RECLAMATION RESEARCH UNIT

PROJECT/ACTIVITY NAME: Reclamation of Acid-Producing Mining Wastes Utilizing Industrial By-Products

AMOUNT REQUESTED: \$ 297,289

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 115,943 Applicant

TOTAL PROJECT COST: \$ 413,232

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

There is a general perception that deep drainage from infiltration and percolation of precipitation into vegetated mine wastes in the semiarid west is not a problem due to evapotranspiration rates that exceed annual precipitation amounts. This has lead to construction of some mine waste repositories that actively produce acid drainage, which in turn has lead to vegetation

mortality, erosion, and widespread water quality degradation. Acid drainage has resulted in many miles of streams in Montana that are devoid of life, are of inadequate quality for irrigation, and are unsuitable for most other beneficial uses. Proper design of repositories for acid-producing materials requires either isolation from the environment or characterization of the wastes and complete neutralization of both potential and active acidity. Industrial calcium oxide and calcium carbonate are typically used as amendments and generally represent a substantial portion of the reclamation costs.

The goals of this research are to develop more cost-effective reclamation of acid-producing mining waste and to provide environmentally sound disposal of some industrial waste products. The objective of this proposal is to evaluate several industrial waste products (quicklime kiln waste, sugar beet processing waste, two types of magnesium-manufacturing waste, and cement kiln waste):

1. For their effectiveness in ameliorating acid production in a coal waste repository
2. For the suitability of the resulting medium for sustained vegetation production
3. To quantify the effect of the established vegetation on the soil moisture regime within the repository

Use of industrial wastes could provide a means for their utilization and disposal, reduce environmental problems associated with their storage, and result in substantially reduced reclamation costs, especially in project areas close to industrial waste sources.

TECHNICAL ASSESSMENT:

This project would further characterize industrial waste products for practical use as neutralizing amendments for acid-producing coal waste. The project would test amendments on field-scale research plots, evaluate the success of vegetation produced on these plots, and quantify the effects of the vegetation on the soil moisture regime, including changes in stored moisture, and deep percolation. The research would be used to formulate guidelines for the use of selected amendments and recommended procedures for waste repository construction to prevent and minimize acid drainage in semiarid conditions.

In Montana, lime is typically added as a soil amendment to neutralize acid-forming hard rock and coal waste materials. According to the applicant, no other reasonable alternative exists today. This project would provide baseline research by analyzing more than one alternative for amending mine wastes.

Two years before this study is slated to end, the Department of Environmental Quality's Abandoned Mine Reclamation Bureau (AMRB) will be reclaiming the entire Lehigh site near Stanford, where the planned research is scheduled to take place. AMRB will be using lime kiln dust waste which it anticipates will achieve a complete level of neutralization. This AMRB reclamation site is not available for the proposed research plots. AMRB does not wish to leave a test area unreclaimed at this site. It is concerned that the test area may continue to be a problem if the industrial by-product amendments fail or are only partially effective. AMRB does not want to have to come back and reclaim the test site, and it feels that it is unlikely that any other entity would conduct as large a scale reclamation effort and achieve as complete a level of neutralization.

The Lehigh site is unique. Once done reclaiming this site, AMRB will be finished with that type of abandoned coal mine reclamation and does not perceive a need for additional work on acidic coal spoils. It does indicate a need for research to control acid mine drainage from abandoned coal mines; however, this research needs to be focused on source control of drainage from underground coal mines, not surface coal piles. Consistent with this need is monitoring water quality from 17 coal mines in the Great Falls-Lewistown coal field that discharge acid drainage from underground workings.

The AMRB suggests that the type of research being proposed by the applicant would be more appropriate on hard rock mines rather than coal mines. Perhaps selecting a hard rock site should be considered. This would also be more useful to the Superfund team.

FINANCIAL ASSESSMENT:

The RDGP budget includes:

Salaries and benefits	\$103,338
Travel	\$ 14,948
Equipment rental	\$ 10,824
Equipment	\$ 12,769
Supplies	\$ 99,239
Communications	\$ 1,800
Laboratory sample analyses	<u>\$ 54,369</u>
TOTAL	\$297,289

Currently, industry must pay for disposal of many of the industrial by-products to be utilized in this study. No contribution from industry is mentioned in the budget. It seems possible that financial backing from private industry could be obtained for at least a portion of this project. For example, Montana Power Company was interested in including coal combustion waste by-products in the research.

ENVIRONMENTAL EVALUATION:

Since this is a research project, there will not be any negative short- or long-term environmental impacts. The research compiled could indirectly lead to positive environmental effects from decreasing acid rock drainage and finding a use for industrial by-products. No permits will be required for this project.

PUBLIC BENEFITS ASSESSMENT:

The project benefits may exceed costs, considering the current cost of using lime products to amend mine wastes. The cost per ton of commercial lime amendments delivered to the project site would be \$76.00 for calcium oxide and \$32.00 for calcium carbonate. By comparison, the cost per delivered ton for quicklime processing kiln waste is \$18.14; for sugar beet process waste, \$15.50; for weathered flux bar magnesium processing waste, \$46.44; for pit-run dical slag magnesium processing waste, \$46.44; and for cement plant kiln waste, \$5.00 to \$20.00. The total hypothetical cost savings for reclamation of the Lehigh site using industrial waste products (excluding the magnesium processing waste) varies from about \$645,600 to \$981,000, according to the applicant.

RECOMMENDATION:

No funding is recommended.

APPLICANT NAME: NORTH POWELL CONSERVATION DISTRICT

PROJECT/ACTIVITY NAME: A Watershed Approach for Mine Waste Cleanup in the Blackfoot Basin, Montana

AMOUNT REQUESTED: \$ 180,000

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 36,000	Applicant
\$ 9,500	Department of Environmental Quality
\$ 4,500	Department of Fish, Wildlife and Parks
\$ 7,000	U.S. Bureau of Land Management
\$ 7,000	U.S. Forest Service

TOTAL PROJECT COST: \$ 244,000

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The Blackfoot Challenge is a consensus-based, watershed management organization in the Blackfoot River basin, Montana. The North Powell Conservation District is one of over 300 members of the challenge, including three county governments, two other conservation districts, several state and federal agencies, and over 250 private landowners in the Blackfoot valley. The challenge has initiated a collaborative effort to address abandoned and inactive mine reclamation and mine waste cleanup in the watershed. The project will focus on two critical issues: (1) the collaborative or "people" processes that will accomplish abandoned hardrock and placer mine reclamation, and (2) the characterization and restoration of priority sites impacting water quality in impaired tributaries. This project will be the first in Montana to address mine waste cleanup on a watershed basis.

The Blackfoot River watershed has many problems related to inactive and abandoned mines. In the 2,500 square miles (1.5 million acres) in this western Montana watershed, these sites cause some of the most serious water quality impairment and general environmental degradation problems needing attention. At the headwaters of the river, for example, many sites have polluted the river for over 100 years. The Mike Horse Mine adit discharge to Beartrap Creek is considered by many to be the "poster child" of abandoned mines because of its nationwide celebrity. Similarly, many sites in the headwaters and elsewhere in the drainage are considered to be problems worthy of attention.

The goals of the project are: (1) to work with the interested local stakeholders, including private landowners and agency representatives, to help organize and facilitate a cooperative process to address mine waste pollution in the Blackfoot River watershed; (2) to develop and implement a collaborative priority-setting process wherein a single priority list of abandoned (and inactive) sites will be established; (3) to establish a collaborative process wherein a basin-wide strategy can be established and adopted by all involved entities that will better characterize priority sites, establish environmental indicators of cleanup success, and implement mutually agreed-upon remediation actions; and (4) to transfer both the collaborative processes information and the cleanup technology information from this watershed-based project to a region-wide or statewide application for improved pollution prevention and environmental remediation.

The project which will begin in June 1996 utilizing other funding sources, will be completed in September 1999. The requested RDGP funds will be used in the period from July 1997 through September 1999.

TECHNICAL ASSESSMENT:

Apparently the applicant's main concern is that state and federal agencies are ineffective and inefficient in implementing cleanup of abandoned mine sites. These shortcomings, it is felt, can be alleviated and solved through a "collaborative" process involving these agencies, the Blackfoot Challenge, and its membership. They cite problems with "three funding priority lists, three planning processes, three programs," etc., and propose that these perceived difficulties are readily remedied through a "collaborative" process.

The "collaborative" process concept is not new. It is an integral part of any agency's planning efforts directed toward abandoned mine cleanup and, in fact, is mandated by Superfund procedures. Community relation plans, public notice, and public meetings are a few of the ways the state and federal cleanup agencies encourage and consider outside involvement in both planning and cleanup efforts. Each of these agencies does in fact have certain priorities for mine cleanups, and thus come with certain ground rules (from the law, in many instances) as a condition of funding or other assistance from that agency. Simply put, another prioritization scheme and priority list, such as the one being proposed, must fit within the existing bureaucratic and regulatory framework. It is suggested that the applicant work collaboratively within this framework, rather than develop yet another prioritization method and priority list. If the applicant's strategy was adopted by other agencies and interest groups, each with its own agenda, the increased number of different priorities and priority lists would only add to the perceived problem.

The construction or site cleanup portion of this proposal has not been identified and therefore could not be evaluated. From experience in funding cleanups, RDGP discourages applicants from requesting funds for projects that have not been identified and for which at least preliminary engineering has been completed. This is especially true of mine reclamation projects, given their complexity.

FINANCIAL ASSESSMENT:

The total cost of this project is \$244,000. The RDGP request for \$180,000 is broken down as follows.

Contracted services	\$175,000
Supplies and materials	\$ 300
Communications	\$ 400
Travel	<u>\$ 4,300</u>
TOTAL	\$180,000

The contracted services budget category lists salary for the executive director of the Blackfoot Challenge - \$15,000; site inventory and characterization - \$24,000, and site cleanup - \$136,000, all coming from RDGP.

Proportionately, a little more than one half of the total cost (56 percent) is targeted for site cleanup, with the remaining 44 percent, allocated mostly to development of a priority list and collaborative efforts. The \$136,000 budgeted for site cleanup will result in little cleanup, if any. The site investigation, sampling, work plan preparation, engineering evaluation and cost analysis, reclamation assessment, and development of design documents, which are required for CECRA/CERCLA actions, could well exceed this amount. Apart from that, the proposed site has not yet been identified.

ENVIRONMENTAL EVALUATION:

The direct environmental impacts cannot be evaluated because a site location for proposed cleanup has not been identified. The development of a coordinated mine cleanup strategy in the Blackfoot River Basin will not create adverse impacts to the environment.

PUBLIC BENEFITS ASSESSMENT:

Expected benefits of an abandoned mine cleanup project would be elimination or reduction of threats to human health or the environment. The benefits could be in the form of improving water quality, closures of hazardous mine openings, reestablishment of vegetation, or prevention of contamination migration. Without specifics on the type of cleanup proposed or the site location, these and other benefits of site cleanup cannot be determined. The prioritization strategy proposed would primarily benefit residents of the Blackfoot River watershed if it leads to actual funding and construction of priority projects.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME: ROSEBUD CONSERVATION DISTRICT

PROJECT/ACTIVITY NAME: Hydrologic and Geologic Feasibility of Coal-Mine Pits as Water Impoundments

AMOUNT REQUESTED: \$ 282,443

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 3,675	Applicant
\$ 167,325	Montana Bureau of Mines and Geology

TOTAL PROJECT COST: \$ 453,443

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

Leaving portions of the final pits of coal mines as water impoundments and bluffs would benefit both mining companies and users of the land after reclamation. The objective of this project is to build scientific methods and guidelines that will be used to encourage this reclamation technique. The published results of the project will be used by coal mining companies, landowners, and government regulators for assessing the hydrologic and geologic feasibility, as well as the economic desirability, of final-pit impoundments. In certain situations, impoundments would create beneficial landscapes for stock and recreation uses and habitat for wildlife. Ranchers, natural resource managers, and mining companies support this reclamation concept.

This proposal focuses on ponds in final mine pits that are fed by groundwater. A secondary focus is the retention of highwalls, which would form bluffs as one shore. Retention of impoundments and bluffs is supported by both mining companies and landowners. Regulations currently require advance proof of stability and longevity for any deviation from the reclamation practice of leaving low-angle, smoothed topography. However, due to a lack of adequate methods for predicting impoundment static water levels, water quality, and bluff stability, regulators are hesitant to permit these reclamation methods.

The Rosebud Conservation District will administer the project and oversee the activities of the Montana Bureau of Mines and Geology personnel who will perform the actual scientific investigation.

The project will focus on an inventory of mine impoundments throughout southeastern Montana, with detailed work at two existing mine-pit impoundments. One is near Colstrip, in Township 1 North, Range 41 East, Section 27. The other will be identified during the inventory of existing coal-mine impoundments in Montana.

A project duration of 24 months will be required. Monitoring will occur during the entire duration. Interpretation and reporting will be done during the final 6 months.

TECHNICAL ASSESSMENT:

The study does not fully address all the multi-disciplinary issues that are part of the decision to leave a pit impoundment. For instance, the suitability of a site for an impoundment that will be used for livestock grazing will depend on soil, vegetation, and wildlife issues. The study might help answer hydrologic and geologic questions for reviewing final pit impoundments and bluffs, but the impetus for such impoundments is not clearly stated except for references to lost surface water sources and the reduced costs from less backfilling and recontouring when highwalls are left in place.

The study would not solve any statutory or water rights problems, and could not address site-specific questions on water quality, final surface water elevation in an impoundment, or highwall stability in sites other than the two studied. The usefulness of the final product would be limited by the proposed number of sites studied. Two sites are not an adequate basis for drafting guidelines or developing criteria for application to different site conditions (topography, geomorphology, surfacewater and groundwater conditions). Impoundment sites chosen for study may need to be observed for longer than a year to gain an understanding of their dynamics, especially regarding meteorological changes. The study may be able to indicate whether the two pit impoundments studied were successful, but a definitive prescription applicable to all proposed impoundment sites is not a reasonable expectation.

Montana's coal regulatory program has favorably considered highwall retention proposals when the highwalls are vertical extensions of existing bluffs destroyed by mining. Stability and wildlife habitat potential also must be considered. Drainage over a highwall is a highly problematic factor, although not necessarily a fatal flaw.

The applicant does not seem to be aware that the decision to leave a pit highwall is not made solely by state authority, but is strongly controlled by a federal statute, the Surface Mining Control and Reclamation Act (SMCRA), implemented by the Office of Surface Mining (OSM). OSM remains reluctant to approve highwall retention for reclamation unless the highwalls replace natural bluffs lost to mining.

The main reason for the study is to reduce reclamation costs by leaving the final pit highwall open. From a regulatory viewpoint, this is scant justification for leaving an open pit. Some reclamation of the site (e.g., recontouring of spoils, revegetation) would have to be completed even if pit impoundments and highwalls were left. A pit impoundment may not be suitable at every mine. (At this time, there are six active surface coal mines in Montana.) The proposal would not document either widespread use of pit impoundments or reclamation cost-savings from their use.

A scaled-down version of this proposal might be more appropriate. The search for existing final impoundments can be easily accomplished with help from DEQ. Part of the goal of Phase I of the proposed study is to inventory existing impoundments and retained highwalls in the Montana portion of the Powder River Basin. There are currently three pit impoundments at Montana coal mines, and only one (Pond A at the Big Sky Mine) has a highwall associated with it. The staff of DEQ's Abandoned Mine Reclamation Bureau report no pit impoundments with highwalls among the abandoned and reclaimed coal mines in Montana. It does not appear that record review and field inventory of existing pit impoundments would take from January until fall of 1998, as indicated in the proposal.

The use of only two years of data from only two sites, and only one year of data obtained from continuous recorders, from which a computer model will be created, seems inadequate to make predictions with the degree of certainty necessary. The same is true for the water quality analysis that is to be undertaken and sediment sampling. Additional water quality measurements for alkalinity, sulfate, sodium absorption ratio (SAR), total dissolved solids (TDS), total suspended solids (TSS), and nitrate and nitrite as total nitrogen, along with sampling for fluoride and aluminum, would be recommended.

FINANCIAL ASSESSMENT:

The budget appears to include all costs to complete the proposed study properly. The consulting fees for geochemical characterization appear high for the amount of time covered (five months). The costs for this part of the study are not adequately documented. There could be more detail about how the travel mileage was determined - in particular, noting whether the trips originate from Butte or Billings - but overall the travel budget is acceptable. As noted in the Technical Assessment section, a simpler analysis that would provide essentially the same amount of usable data could probably be done at less cost. Benefits of the study, as proposed, would be marginal and might not justify the cost.

ENVIRONMENTAL EVALUATION:

The proposed project would include field research methods that, if done properly, should result in only short-term disturbances with low levels of residual impacts. Permits may be required for conducting the proposed drilling and for pumping and slug tests.

PUBLIC BENEFITS ASSESSMENT:

The public benefits of this proposed study appear limited in scope. Availability of surface water would be beneficial to landowners if grazing were part of the approved post-mine land use.

RECOMMENDATION:

No funding is recommended for this project.

<u>APPLICANT NAME:</u>	UNIVERSITY OF MONTANA - GEOLOGY DEPARTMENT	
<u>PROJECT/ACTIVITY NAME:</u>	Gold Resource and Groundwater Contamination of the Judith Mountains: An Evaluation Plan	
<u>AMOUNT REQUESTED:</u>	\$ 39,799	
<u>OTHER FUNDING AMOUNTS AND SOURCES:</u>	\$ 25,186	Applicant
<u>TOTAL PROJECT COST:</u>	\$ 64,985	
<u>RECOMMENDED FUNDING:</u>	0	

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

The Judith Mountains, located northeast of Lewistown, are part of the important gold-bearing north-central Montana alkali igneous rock province of late Cretaceous/early Tertiary age. Presently, large quantities of gold and silver are being extracted from the Zortman-Landusky deposits in the Little Rocky Mountains. In the Judith Mountains, significant gold-silver production (>700,000 ounces of gold) has come mainly from deposits in and adjacent to igneous plutons. The district, presently inactive, has great potential - in light of new deposit-type gold discoveries (e.g., near Carlin, Nev.) and modern ore genesis theories - of containing large tonnage, low grade gold and silver deposits within the Paleozoic carbonate/clastic rocks (approximately 50 square kilometers of which are exposed) that surround the central and southern half of the igneous-rock-cored hills.

Furthermore, should mining resume, the potential exists for major aquifer pollution from mining and ore processing, which occurred as recently as the 1980s at the Giltedge deposit and on Ford Creek.

The goal of this study is to ascertain the precious metal potential of the area. Our objectives are to (1) delineate the areas within the carbonate rocks surrounding the igneous intrusions with the greatest potential for sediment-hosted deposits by doing detailed surface geologic mapping, whole rock geochemistry, and thin section and SEM petrography, and (2) determine the stratigraphic/structural settings in these more favorable zones in order to rate them with regard to porosity/permeability characteristics for transmitting contaminated fluids containing cyanide and/or toxic metals.

The work will be done during the summers of 1997 and 1998, and finished during the spring of 1999, by researchers from the University of Montana and the University of New Mexico who have studied and written extensively about the geology, structure, and mineral deposits of central Montana, including the Judith Mountains.

TECHNICAL ASSESSMENT:

The proposed research would provide additional information about the presence of gold and silver in the Judith Mountains. While it is an important part, it represents only a fraction of the necessary sampling, mapping (surface and subsurface), geochemical analysis, hydrogeologic interpretation, and core-drilling data necessary to attract major investment and development to the area. The difference between what this proposal attempts to ascertain, and that which would normally be required of any company seriously considering development and mining, is not easily distinguished. An exploration or mining company study is likely to be much more comprehensive, simply because these companies have more funds, more technical resources, and the added ability to conduct a drilling program - something considered essential in ascertaining the mineral potential of a likely prospect. In that light, much of the information gathered and compiled as a result of this study may be gathered again by a mining venture in the normal course of discovery, exploration, permitting, and development. Development of these mineral resources will be driven primarily by precious metal market conditions and not directly by the results of this study. Absent a direct and obvious link between this proposal and near-term development of the gold-bearing deposits under study, the proposal rates a low priority for use of RDGP funds. The study would be useful to mining companies as a preliminary screening tool for identification and analysis of potential mine development properties located in the Judith Mountains. The hydrologic data and interpretation would be useful to mine regulatory agencies primarily.

FINANCIAL ASSESSMENT:

The RDGP budget request consists of:

Salaries, wages, benefits (grad student)	\$ 8,118
Contracted services (rock and element analysis)	\$ 13,800
Supplies and materials (maps, film, aerial photos)	\$ 300

Communications	\$ 300
Travel	\$ 13,796
Equipment (3 GPS units)	\$ 1,050
Miscellaneous (Indirect in salaries, 30 percent)	\$ 2,435
TOTAL	\$ 39,799

The proposed budget is well documented and reasonable for the work performed. Indirect costs (\$2,435) are ineligible for RDGP funding. Matching contributions (\$25,186) are salaries and wages for the principal investigator.

ENVIRONMENTAL EVALUATION:

This project is unlikely to have significant direct adverse effects on the environment. Indirect effects could be both beneficial and adverse. If the geological portion of the study eventually results in increased mining activity, there could be at least short-term adverse impacts to the natural environment, while employment increases and tax revenues could benefit the human environment. A small amount of knowledge might be gained about potential for groundwater contamination and need for groundwater protection.

PUBLIC BENEFITS ASSESSMENT:

The chief public benefit that might be gained would be increased knowledge about mineral and groundwater resources in and near the Judith Mountains. Increased knowledge may make the area more desirable to mining companies, but there is no guarantee that this small project would have a major effect on a mining company's decision to conduct exploration or mining activities.

RECOMMENDATION:

No funding is recommended for this project.

APPLICANT NAME: YELLOWSTONE COUNTY

PROJECT/ACTIVITY NAME: South Billings Boulevard Gravel Pit Reclamation

AMOUNT REQUESTED: \$ 300,000

OTHER FUNDING AMOUNTS AND SOURCES:

\$ 31,000 Applicant

TOTAL PROJECT COST: \$ 331,000

RECOMMENDED FUNDING: \$ 0

PROJECT ABSTRACT: (Prepared and submitted by applicant.)

This applicant seeks Reclamation and Development Grant Program funds for the purpose of reclaiming land currently used as a gravel pit. The present quarry operation is required to reclaim the disturbed area and return a public "natural" resource to the people of Montana.

The overall goal will be to reclaim the quarry site and develop it for future recreational uses. Objectives will be to (1) improve and protect the natural landscape, such as sensitive river riparian areas; (2) consider potential options and/or environmental constraints when developing the final design plans for reclamation; and (3) unite financial resources and solicit support of neighboring landowners so project activities do not conflict with the comprehensive plans of government.

Yellowstone County, the City of Billings, and the Yellowstone River Parks Association (YRPA) will provide administrative overview and serve as project coordinators. Yellowstone County can legally enter into a contract with the Montana Department of Natural Resources and Conservation.

The Yellowstone River/South Billings Boulevard gravel pit and crushing operation are approximately three-quarters of a mile from the South Billings Interchange for Interstate Highway 90. The legal description is Tract I of Certificate of Survey No. 2649 on file in the Clerk and Recorder's Office for Yellowstone County. The land or property is made up of part of Lot 1, the SE¼ of Section 17, and Lot 2 of Section 20, Township 1 South, Range 26 East, of the Montana Principal Meridian, in Yellowstone County, Montana.

The time line is from January 1, 1998, through December 31, 1998. Project activities will be completed within 12 months.

TECHNICAL ASSESSMENT:

The applicant, City of Billings, and YRPA propose to develop a gravel pit site to a recreational end use. Development would take place after the site is reclaimed by the current gravel pit operator and would connect the site to other parklands along the Yellowstone River Greenway corridor.

Site development would be consistent with the Yellowstone River Greenway Master Plan (updated in 1994), which apparently contains specific design/construction specifications for the river corridor development. This information was not submitted and would have been useful in evaluating how the cleanup and the proposed gravel pit development blend with other plans for park improvement along the riverfront.

The application states that the gravel pit property will be deeded to the county no later than January 1, 1998. It is also stated that construction will begin in July 1997, if RDGP funds are approved. A long-term lease or a property deed needs to be in place before commitment of RDGP funds to design or construction activities.

Since the exact nature of the proposed development has not been determined, it is unknown whether it represents a cost-effective and viable alternative for riverfront/parkland development. A commitment of RDGP funds at this point seems inappropriate. Funding this request could be considered in future grant cycles after (1) regulatory/operator-performed reclamation of the gravel pit is complete, (2) the reclamation results are evaluated, and (3) a clearer picture of project design materializes.

The following information is suggested to strengthen a future grant application.

1. A preliminary proposal describing the portion of the master plan that would be completed with requested grant funds
2. Project-specific information including a proposed scope of work, identification of areas of sensitive river riparian habitat that would be improved or protected, and an explanation of how reclamation of the gravel pit under the Mined Land Reclamation Contract would be incorporated into park development
3. Documentation of project urgency and consideration of several project alternatives including park development phased over a period of years

4. Identification of sources of outside funding other than the reclamation contract bond, including attempts to obtain funding from these sources
5. Written documentation of the property transfer agreement between JTL Group, Inc. and Yellowstone County
6. Cost estimates based on unit price and quantity figures

FINANCIAL ASSESSMENT:

The RDGP project budget of \$300,000 would provide \$124,140 for contracted services and \$121,110 for supplies and materials, the two largest categories. Other budget items are \$15,000 for salaries and wages, \$3,750 for employee benefits, \$3,500 for communications, and \$2,500 for travel. A contingency of \$30,000 is also budgeted.

The project budget raises several concerns. The reclamation bond of \$31,000 would not be available for matches of salaries and wages, employee benefits, communications, and travel, as indicated by the applicant. Rather, this bond would be used to reclaim to standards required in the Mined Land Reclamation Contract between JTL Group, Inc. and the State of Montana. The reclamation bond of \$31,000, presumably, is sufficient to grade all slopes to 3:1 or flatter, replace overburden and topsoil, and revegetate with a grass species mix. No additional funding sources other than the reclamation bond are identified.

The applicant submitted a revision to the original budget that changed the original contracted services and supplies and materials categories. Contracted services is now budgeted at \$115,750, and supplies and materials at \$120,526. Other budget categories were not affected. The two revised budget categories result in a decrease of the overall project cost by \$8,974. The acreage to be reclaimed with grant funds also decreases from 27.39 acres to 16 acres. The disparity in budgeted amounts and acreage calculations is not explained; therefore, how these changes relate to the overall budget is difficult to evaluate.

The reasonableness of estimated project costs cannot be fully evaluated since a site plan and detailed scope of work are not provided. It is unlikely that adequate funds have been requested to complete the entire conceptual plan shown in the application. The cost estimates that have been provided on a per-month basis also contain too many variables for accurate evaluation.

ENVIRONMENTAL EVALUATION:

Adverse impacts from the proposed project would occur during the construction phase and would result from increased traffic, noise, and activity. These effects would be short-term (a few months) and minor for those recreationists using adjacent parklands at Riverfront Park and Schoenthal Island. Long-term benefits following project completion would result from the restoration of some riparian habitat to this part of the river corridor, though most of this site is planned for commercial recreation development, a 10-acre amphitheater, and parking. Recreationists would benefit from improved access and opportunities following reclamation and construction.

PUBLIC BENEFITS ASSESSMENT:

Transfer of 27 acres to the county would provide a connecting link in public ownership between two existing parcels in the greenway - Riverfront Park and Schoenthal Island. Additional long-term public benefits such as increased public recreation opportunities, restoration of the riparian corridor, and enhanced scenic beauty would occur following completion of site improvements shown in the conceptual plan.

RECOMMENDATION:

No funding is recommended for this project.

ABBREVIATIONS

AMRB	Abandoned Mine Reclamation Bureau
ARARS	Applicable or Relevant and Appropriate Requirements
ARCO	Atlantic Richfield Company
BMP	best management practice
BOGC	Montana Board of Oil and Gas Conservation
CD	conservation district
CDB	Conservation Districts Bureau, Montana Department of Natural Resources and Conservation
CECRA	Comprehensive Environmental Cleanup and Responsibility Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DEQ	Montana Department of Environmental Quality
DHES	Montana Department of Health and Environmental Sciences (now Department of Environmental Quality)
DNRC	Montana Department of Natural Resources and Conservation
DSL	Montana Department of State Lands
EA	environmental assessment
EECA	engineering evaluation and cost analysis
EPA	U.S. Environmental Protection Agency
FSP	field sampling plan
GIS	Geospatial information system
GPS	global positioning system
ISO	Industrial standards organization
MBMG	Montana Bureau of Mines and Geology
MCA	<i>Montana Code Annotated</i>
METNET	Montana Electronic Telecommunications Network
MHCH	Mile High Conservation District
Montana	
Tech	Montana Tech of the University of Montana
MSU	Montana State University
NCP	National Contingency Plan
NPS	nonpoint source
NRCS	Natural Resource Conservation Service, U.S. Department of Agriculture
OSM	Office of Surface Mining, U.S. Department of the Interior
PA	Preliminary Assessment
RC&D	Resource Conservation and Development Area
RCRA	Resource Conservation and Recovery Act
RDG	Reclamation and Development Grant
RDGP	Reclamation and Development Grants Program
RI	Reclamation investigation
RI/FS	Remedial investigation/feasibility study
RIT	Resource Indemnity Trust
RRGL	Renewable Resource Grant and Loan
RRU	Reclamation Research Unit
RWP	Reclamation work plan
SAR	sodium absorption ratio
SMCRA	Surface Mining Control and Reclamation Act

TDS	total dissolved solids
TLMD	Trust Land Management Division
TSS	total suspended solids
USDA	U.S. Department of Agriculture
USFS	Forest Service, U.S. Department of Agriculture
WQA	Water Quality Act
WQPD	Water Quality Protection District
YRPA	Yellowstone River Parks Association

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Montana Department of Natural Resources and Conservation



1625 Eleventh Avenue
P.O. Box 201601
Helena, Montana 59620-1601
(406) 444-6668

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